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SELLING IT

Goofs and Gaffes

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READER LETTERS

Your Thoughts on the Annual Auto Issue, Suspicious Websites, and More

Family (Best and Worst) Values

My wife and I laughed out loud at the Annual Auto Issue (April 2015). How many other households own a “best” and “worst” car? Our Camry Hybrid and Jeep Wrangler get along just fine.

—Rocko Graziano, Readfield, ME

I Want a New Car!

I have a 2006 Acura MDX—purchased new—and I’m really itching for a new car. Fortunately for my husband, “Do You Really Need A New Car?” (April 2015) did confirm that our MDX does indeed have much life left to live. Unfortunately for me, I must now wait until problems arise and it becomes more cost-effective to purchase a new vehicle. Thanks for making the annual Auto Issue the must-read in our home each year. And darn you, Acura, for making such a fabulous car! I really want a new one!

—Lauren Glessner, Chandler, AZ

Defensive Driving 2.0

I found “Cars That Can Save Your Life” (April 2015) interesting, but at the same time disconcerting. You list a rear camera as a “must-have.” My feeling is that nothing in that entire article is a “must-have.” Whatever happened to good old driver common sense and defensive driving?! Are drivers today becoming so careless or inept that they need electronics to do their driving for them?

—Rich Taylor, Pittsville, WI

Don’t Let Radiologists Off the Hook

As a radiologist, I was glad to see “Overexposed” (March 2015). Although CT scans have clearly decreased morbidity and mortality from a variety of conditions, inappropriate utilization coupled with poor technique has put patients at risk, particularly children.

The article ignores a critical link in applying appropriate imaging to clinical concerns: the radiologist. Radiologists review requests for imaging studies, contact the ordering caregiver if a change is indicated, tailor the exam for the condition of the patient, and oversee the performance and interpretation of the study. We should not be let off the hook when it comes to radiation and patient safety.

—David M. Paushter, M.D., professor and chairman, department of radiology, the University of Chicago

Hooray for ‘Unofficial’ Sites

As an online developer for 20 years, I read “Don’t Click on Kimmel” (The Update, March 2015) with interest. What makes the Internet so special is that it’s an equalizing force and a platform for hobbyists and entrepreneurs in addition to corporate interests. By steering consumers only to corporate sites, with content that is paid for rather than created from passion, you inadvertently undermine this spirit. If everyone uses only websites deemed “official,” we’ll be left with an Internet that looks a lot like TV—not the diverse online environment most of us enjoy.

—Robert Kenney, Sea Cliff, NY

Herbicide and Pesticide

In your graph “Pesticide Boom” (“FAQs About GMOs,” Your Advocate, March 2015), you mention “glyphosate on the rise.” Glyphosate is not a pesticide: It is a herbicide, or weed killer.

—Ron Jess, Spokane, WA

EDITOR’S NOTE Herbicides such as glyphosate (aka Roundup) are a subset of pesticides; they account for the majority of pesticide use on genetically engineered crops.

Watch the Corvette!

I wouldn’t call the folks in the “Meet the Toughest Car Critics in America” photo “car enthusiasts,” as your April 2015 article boasts. Check out what some are doing to the blue C7 Corvette. I’ve been a Corvette owner for over 40 years and I can tell you that a true car enthusiast would never sit on any car’s hood, let alone a \$75,000 Corvette. Test the hell out of the cars, but respect them when you’re done.

—Jay Lomberg, Barnegat, NJ

A CLARIFICATION ON MORTGAGE BROKERS In the March 2015 issue, the article “Home-Sale Mistakes That Cost You Money” suggested that mortgage brokers may be more focused on selling you a mortgage than getting you the best deal. In fact, we recommend that buyers compare deals from a variety of sources, including mortgage brokers and banks, keeping in mind that some of those entities also have a stake in the transaction.



SEND your letters for publication to ConsumerReports.org/lettertoeditor.

FROM THE PRESIDENT



The Risks and Rewards of Connectivity

This month we bring you an in-depth look at the Internet of Things and how it is changing our lives. The world is rapidly becoming a place where the devices people rely on every day are connected to a network that freely exchanges information. That can offer great convenience but also raises fundamental questions about transparency and privacy.

Many of these devices are versions of familiar products like televisions and home security systems, which use the Internet to learn and respond to our habits and preferences. This connectivity can be beneficial, at times even money-saving. Think about the thermostat that turns on your air conditioning shortly before you come home. But all this convenience comes with trade-offs, as information about your habits can be sent to servers that may share that information with marketers, or worse, that can be accessed by digital thieves.

At Consumer Reports, we believe in a transparent marketplace. That means making sure you know up front how this data is going to be used. You may decide the benefits of these products or services outweigh the risks, but in order to do that, you have to know the full story. We take very seriously the trust you place in us to help you make an informed choice.

—Marta L. Tellado, President and CEO

FROM THE EDITOR



4 Things I've Learned From Our Experts—and Our Readers

Here at Consumer Reports, I have access to scientists, technicians, and testers who are authorities on, oh, just about everything. I learn just as much from our smart, dedicated readers. For example:

Seafood tastes better when you know how it's raised.

Knowing that your shrimp's free of bacteria or antibiotics, and that its production didn't harm the environment, enhances any meal. See our shopping tips on page 17.

Frequent-flyer miles are no freebie. They're built into the cost of every flight you take, so make the most of them. On page 31, we tell you how.

Lithium batteries make sense in cool climes. William Swanson liked our response to a question about batteries in our March issue and sent us an extra reason to buy lithium: "As a winter hiker, I often take electronics like a GPS or a headlamp. In low temperatures, lithium batteries work well, while alkaline need periodic warming."

There's more than one way to pedal. In April's Selling It, we mistakenly used the word "pedaling" to describe a business that had something for sale. Thanks, Roger Mesznik, and several others, for correctly pointing out it should have been "peddling."
—Ellen Kampinsky,
Editor-in-Chief

Coming in July

TIPS FOR A
HEALTHY, SAFE,
FUN SUMMER



The Truth
Behind "Made in
the USA"



Sunscreen
Ratings



Safe,
Effective Insect
Repellents



Keep-Cool
Strategies



How to Take
Better Photos

YOUR IDEAS COUNT

"I don't
like it."



"I love it!"

Give Us Your 2 Cents

Has our privacy story changed your thinking about "smart" devices? Will you use any of our outdoor entertaining tips in your own backyard? Tell us what you think about anything and everything in this issue of Consumer Reports.

→ **SHARE YOUR INSIGHTS** by sending us a letter for publication—or by joining our Reader Advisory Panel. Go to CRRResearch.org/feedback.

CR EXPLAINED

500 Pounds of Shrimp: The Lengths We Go to in Our Testing

OUR STUDY OF SHRIMP began in March 2014, when we first enlisted an army of shoppers across 27 cities, asking them to buy a wide variety of the seafood to give us a picture of what's on the market. They purchased about 500 pounds—wild and farmed, uncooked and cooked, from 10 countries—packed it in dry ice, and shipped it to our lab, where technicians divvied up the samples for a battery of tests.

Some of the samples went to a team of microbiologists, who searched for bacteria that could potentially cause illness, including E. coli, salmonella, and vibrio, first using a process called

"stomaching," in which each sample is ground up, then tested for contamination. (We later analyzed that bacteria for antibiotic resistance.) The other samples wound up in a chemistry lab, where each was blended into a paste and tested for chemical residues, including antibiotics.

All told, we spent about \$450,000 testing shrimp (see our report, on page 18). "We hope that the results will help people learn about where it comes from," says Michael Crupain, M.D., director of our Food Safety and Sustainability Center, "and that the government will do more to ensure its safety."



GETTY IMAGES (4); BRUCE JAMES/STOCK FOOD (SHRIMP)

Your ADVOCATE

PER POUND—OR UNIT

To find the best value on the fruit below, you'd need a scale—and a calculator.

WHY IT MATTERS

Consumers who rely on unit pricing as a basis for comparison can save more than 50 percent by choosing the most economical size, according to research.

GOOD LUCK FINDING INFO

Our shoppers found huge size variations in unit-price labels, from type that was a measly 0.22 inch at ShopRite to as large as 0.66 inch at Walmart.



CHEAPER BY THE DOZEN?

Unit pricing was supposed to make it easy to compare apples and oranges. But inconsistencies abound. On page 10, learn what you can do.

PHOTOGRAPH BY SAM KAPLAN

READER TIP

Quick Pain Relief: Just Add Rice

“When you need to apply heat to any body part, take a sock, fill it with uncooked rice, and tie a knot at the end. Microwave for 30 to 45 seconds, then apply the sock to the affected area. It’s economical and more effective than a heating pad.”

—Stephanie Hanel-Seitz,
Hendersonville, NC

Our experts add: That sounds like a reasonable fix for someone who doesn’t have a heating pad. But you obviously won’t have control of the temperature or the length of time the treatment will be effective. As with all heat applications, separate it from your skin with several folds of towel or fabric. And don’t use it (or a heating pad) with pain-relief creams such as Bengay.



Send Your Top Tip To:
ConsumerReports.org/cro/readertip.
If we run it, we’ll pay \$100!

HEROES & WATCHDOGS

Hit With Almost \$100K in Surprise Medical Debt, She Fought Back



CLAUDIA KNAFO interviewed several physicians before her spinal surgery in 2012, finally finding one she trusted and who took her health insurance. Her recovery was smooth, but sorting through her claims afterward was confounding: The hospital website said that her doctor accepted her plan, but he had dropped the carrier in 1997. That meant her out-of-network coverage for the \$101,000 surgery was a paltry \$3,510—and she was on the hook for the rest.

Fearful that her family would have to file for bankruptcy, Knafo, a concert pianist based in New York City, spent the next seven months searching for a fix. “It consumed every hour of my day,” she recalls.

The insurance company eventually dropped the charges, but Knafo continued to have a sense of outrage. “I’m an educated person, able to write

a letter and hire a lawyer,” she says. “What happens to people without those resources?”

She shared her story last year at a press conference sponsored by Consumers Union, the advocacy arm of Consumer Reports, as part of our ongoing efforts to stop “surprise” medical bills. “Claudia has a deep sense of moral outrage about the unfairness of what happened,” says Chuck Bell, CU’s programs director. “She wanted to fight for a law to protect others.”

In April, a law went into effect in New York state that gives unprecedented protection to patients, shielding them from such errors. Knafo hopes it’s a model for other states: “I’ve learned you really can use your voice to institute change.”

→ **KNOW A CONSUMER HERO?** Fill us in on the champions you admire most. Write to us at heroeswatchdogs@cr.consumer.org.

GET INVOLVED

Actions You Can Take in June

→ ASK CONGRESS FOR SAFER DETERGENT PODS

Each year poison control centers receive thousands of calls about children mistaking laundry detergent pods for candy, with serious health consequences. Some manufacturers are working to make the containers childproof. The Detergent Poisoning and Child Safety Act, now before Congress, would create safety standards for the packaging, design, and labeling of the pods. You can contact your rep in Congress about supporting that important bill at opencongress.org.

→ HANG UP ON CRIMINALS

Robocalls aren’t just annoying recorded messages; they’re often tied to scams costing Americans about \$350 million each year. Consumer Reports is urging phone companies to give consumers call-blocking options. Sign our petition at endrobocalls.org.

→ THE WIN: CLEANER CREDIT REPORTING

The big three credit-reporting bureaus (Equifax, Experian, and TransUnion) have agreed to reforms that we’ve long advocated, including fixing errors faster and waiting 180 days before including medical debts, to allow for insurance payments. We also think that reliable credit scores should be a required part of free annual credit reports.



PROBLEM SOLVER

An Unkept Promise

One customer thought she had a great deal—but then the bill came

LONGTIME VERIZON CUSTOMER Debbie Colaneri had a good phone plan, but she thought she could do better.

Colaneri, who lives in upstate New York, was paying Verizon \$128.42 per month for four lines to cover her family; they shared 700 voice minutes and unlimited text messages. Their rate included a 19 percent discount that her husband got through his job. Having long paid off their phones, they wouldn't be penalized for leaving Verizon. Colaneri, a 30-year subscriber to Consumer Reports, was considering a switch to Consumer Cellular, a carrier that we've given high marks to for several years.

After telling a Verizon rep that she was shopping around, Colaneri says she received what seemed to be a great offer: unlimited voice minutes and text messages, 1.5GB of sharable data, and four phone lines. Also included was an upgrade of three of the family's traditional flip phones to new iPhone 6 models (her son would keep his old phone) for about the same monthly cost, with no fees for upgrading. The deal included the 19 percent discount the Colaneris had with their earlier plan, according to Colaneri. The only extra expense would be the down payment for the three new iPhones, about \$180 each with a two-year contract.

Colaneri bought the new phones at a local Target; she spoke with Verizon reps before leaving the store to confirm that the deal was real.

"All set," she was told before she signed.

Then came the first bill: a shocking \$350.81 for a month and a half of service, with neither the upgrade fees waived nor the 19 percent discount Colaneri expected. From then on, the monthly bill dropped to \$184.59, still significantly higher than the \$128.42 she was originally paying.

Colaneri says she spent hours on the phone with Verizon; a rep finally told her that someone had filled out the wrong forms and that the plan she was promised had expired.

So she reached out to us, and we contacted Verizon, which agreed to reopen the case. An understanding was reached, with Colaneri accepting a \$415 credit and the option to leave the contract early.

To Avoid Getting Stuck in a Bad Deal:

Get written documentation. Upgrades and fees are easily misunderstood, so in the store, ask the rep to tell you exactly what's included in the monthly bill. Print out and carefully review an order before you buy online.

Find the exit. Most carriers have a grace period for leaving a contract as long as you return the phone in near-pristine condition.



FED UP WITH A COMPANY'S CUSTOMER SERVICE? Contact Consumer Reports'

Problem Solver at problemsolver@cr.consumer.org.

ON YOUR SIDE

Subscription Scam: State AGs Step In

Even devoted readers don't want to pay twice the price for a year of National Geographic, The New York Times, or, yes, Consumer Reports. That's why the attorneys general in five states filed lawsuits against several companies hawking unauthorized subscriptions to more than 40 leading publications.

We first covered this problem in 2013, after some of our readers complained of receiving unauthorized subscription notices. We brought the matter to the attention of the attorney general's office in New York, where some of the victims live. Now that office and its counterparts in Oregon, Minnesota, Missouri, and Texas have taken action. Dozens of solicitation companies have been named, including the Associated Publishers Network, the Express Publishers Service, and the Magazine Clearing Exchange.

According to the New York lawsuit, the companies usually collected inflated payments for new or renewal subscriptions, then paid the publishers the actual cost of the subscriptions, pocketing the difference. (Some consumers also reported sending payments and never receiving their publications.)

"Misleading subscription notices rip off large numbers of unsuspecting consumers," says Eileen Hershenov, vice president and general counsel at Consumer Reports. "We are very happy with the AGs' aggressive response."

If you receive a renewal notice in the mail, make sure that it has an expiration date that matches the one on your magazine label. A missing date is a sign of a possible scam, as is any kind of "cancellation fee" for a magazine subscription.



HAVE YOU RECEIVED A SUSPICIOUS MAILING? If you think you were a victim of a magazine or newspaper subscription scam, call your state attorney general or postal inspector.



THE EMPOWERED CONSUMER

No Basis for Comparison

Unit pricing was created to allow you to fairly judge the costs of similar products. It doesn't always work out that way.

PICTURE THIS: You're at the supermarket trying to find the best deal on AAA batteries for your flashlight, so you check the price labels beneath each pack. Sounds pretty straightforward, right? But how can you tell which pack is cheaper when one is priced per battery and another is priced per 100?

Welcome to the perplexing world of unit pricing. Eight in 10 Americans rely on those labels to determine the most economical brands and package sizes. In theory, they're the easiest way to see whether purchasing a 59-ounce container of orange juice is cheaper than buying a quart.

Consumers can be confused or even misled when unit-price labels are inconsistent or unclear. And that's often the case. There are no federally mandated, standardized requirements for unit pricing as there are for Nutrition Facts labels. They're actually exempt from the Federal Trade Commission's Fair Packaging and Labeling Act.

"Neither industry nor state government perceives a big problem with unit pricing in the marketplace," says David Sefcik, a weights and measures expert for the National Institute of Standards and Technology (NIST), an agency in the Department of Commerce. "It's an issue that hasn't generated a lot of consumer complaints because many people simply don't know what they're missing, and that improvement is needed."

The major chains feel no need to change without pressure from consumers, he adds.

Inconsistency Is the Standard

Consumer Reports last uncovered widespread inconsistencies in unit-price labels in 2012, when we worked with NIST to create an ideal label.

Today, unit pricing remains essentially voluntary. Only nine states and the District of Columbia have mandatory regulations, but they differ from each other. Ten other states have voluntary regulations that follow recommendations from NIST.

We recently shopped at nine stores near our headquarters in Yonkers, N.Y., and found a mixed bag in terms of content and clarity as well as layout and legibility.

Some labels had type as tiny as 0.22 inch, unreadable for impaired or aging eyes. Others had different ways of comparing the same

DOUBLE TAKE

A close look at these two bottles of salad dressing, which we found side by side at a supermarket, shows one priced by the quart (shown at left), the other by the pint.



products. We found:

- Furniture polish priced by the pound and by the pint.
- Batteries and toothbrushes priced "each" and "per 100."
- Salad dressing priced by the pint and by the quart (see above).
- Toilet paper priced by "100 count," though the "count" (a euphemism for "sheets") differed in size and number of plies depending on the brand.
- Dental floss priced per pack, though containers varied widely in capacity, from around 30 yards to more than 100.

What Needs to Be Done

Since 2012, Sefcik has gathered input on unit pricing from academics, consumer watchdog groups, officials, retailers, and trade associations. He compiled their recommendations into a guide, "A Best Practice Approach to Unit Pricing," that is the first comprehensive primer on the layout, design,

and presentation of unit-price labels. It was released earlier this year. (Find it at nist.gov/pml/wmd/pubs/upload/SP1181-Unit-Pricing-Guide.pdf.) His goal is to encourage companies to follow the standards, eliminating ambiguities once and for all.

"Now that retailers have a national set of guidelines of how to implement item pricing in the most effective way, there is no excuse or reason for them not to provide it," says Edgar Dworsky, a former assistant attorney general for consumer protection in Massachusetts. "It is part of good customer service."

What You Can Do

When comparing unit-price labels, make sure that you're really comparing apples to apples. If some apples are sold by the piece and some by the pound, you might need a scale or calculator to determine the best deal. And if labels are inaccurate or illegible, don't suffer in silence: Tell a store manager.

Too Much Tuna

While the federal government debates how much fish you should eat, we say: Make the guidelines even stricter

GET READY FOR MORE debate about who should eat tuna—and how much. The arguments arise from concerns about the levels of mercury in fish, and the outcome could be far-reaching, affecting everything from school lunches to food aid programs.

For more than a decade, federal agencies have said that women of childbearing age and young children should limit their weekly consumption of albacore (white) tuna. That's because it contains three times more mercury, on average, than canned light tuna; even just a few sandwiches can expose some people to too much. Now a federal committee is suggesting that the warning be eliminated, a move that Consumer Reports' experts strongly oppose.

Mercury can damage the brain and nervous system, especially when exposure occurs in the womb. That's why we recommend that pregnant women not eat tuna and any other high-mercury fish, such as shark and swordfish. High-mercury seafood can pose health risks to other vulnerable groups as well. So we also recommend that young children, women of childbearing age, and anyone who eats 24 ounces or more per week of any fish limit their tuna consumption, especially those kinds that are high in mercury, such as yellowfin and other species used in sushi.

The importance of that advice was underscored earlier this year by a study that found that mercury levels in yellowfin tuna had increased at an annual rate of almost 4 percent from 1998 through 2008. Rising mercury levels in oceans because of pollution from coal-fired power plants and other industrial sources are to blame, the study suggested.

Canned tuna is the second most popular seafood in the U.S. (shrimp is first) and is responsible for about 37 percent of the dietary mercury exposure. Canned albacore accounts for almost 20 percent of that.

Why the Proposed Change?

The federal committee's report is part of the government's development of its 2015 Dietary Guidelines for Americans, which affect recommendations for many federal food programs. Its suggestion is based on a 2011 report that concluded that the benefits of eating albacore tuna outweighed the risks, even for pregnant women.

But Philippe Grandjean, M.D., Ph.D., a leading Harvard researcher on mercury in fish, says, "The committee's advice about tuna is based on a flawed benefit/risk calculation that overlooks a substantial body of evidence about the dangers of prenatal mercury exposure."

The safe limit for exposure to methylmercury (the form that accumulates in fish and shellfish) was set in 2001 by the Environmental Protection Agency. Since then, many studies have found adverse effects from exposure to mercury at or even below that level. Deborah Rice, Ph.D., a former EPA senior risk assessor who co-authored the report establishing the 2001 limit, now says that the acceptable level should be lowered.

Even using the current EPA limit, our experts' analysis of Food and Drug Administration data indicates that a 48-pound child would go over that limit by eating more than 1.4 ounces of albacore per week, which is about one-third of a can. A woman weighing about 140 pounds would exceed it by eating more than 4.5 ounces of albacore weekly.

"We believe the FDA should advise stricter limits on tuna consumption and educate people about other fish that have health benefits without the risks," says Jean Halloran, director of food policy initiatives for Consumers Union, the advocacy arm of Consumer Reports. "It isn't simple, but that's no excuse for the FDA to throw up its hands and give no help to pregnant women who may have a toddler to feed and a family to cook for."

What to Watch For: Our Advice

Tuna lovers should consider how much tuna they eat. Pregnant women should avoid it entirely. Three vulnerable groups also must be careful: women of childbearing age, young children, and people who eat 24 ounces or more of any fish per week.



CANNED ALBACORE (WHITE) TUNA

Eat no more than 4.5 ounces per week if you're a woman of childbearing age. All others should limit their intake based on body weight.*



CANNED LIGHT TUNA

Mercury levels are lower than in canned albacore, but limits based on body weight still apply. For a 140-pound woman, that's no more than 13.5 ounces per week.*



TUNA SUSHI

Ahi tuna (yellowfin and bigeye) is high in mercury. People in vulnerable groups should avoid it. Others can eat it sparingly.



FRESH OR FROZEN TUNA

Limit intake based on the type of fish. For albacore, follow advice in first column; for skipjack, see light-tuna advice; and for other types, follow advice for tuna sushi.

WHAT SHOULD BE DONE

Our experts have urged the FDA and the EPA to take these steps to minimize Americans' mercury exposure:

- Advise consumers about which types of seafood are lower in mercury when urging them to eat more fish.
- Advise pregnant women to avoid eating any tuna, including canned light tuna.
- Advise women of childbearing age to eat no more than 4.5 ounces of albacore per week.
- Include anyone who eats more than 24 ounces of fish per week among groups considered vulnerable to mercury overexposure.
- Add orange roughy and marlin to the list of fish that vulnerable groups should avoid, and consider adding bluefin and bigeye tuna to the list.

*To determine safe levels of canned-tuna consumption based on your body weight, go to ConsumerReports.org/cro/fish1014 and select "Safer Seafood Choices."

➔ MORE ON FISH AND YOUR HEALTH
Read our tips for smart shrimp shopping—and safe prep—on page 18.



Beat Those Weeds

A batch of mostly organic solutions (hold the Roundup)

AS WE REPORTED last month in our annual lawn-care guide, the average yard contains 10 times more chemicals per acre than a typical commercial farm. You can make your lawn less toxic by skipping the nitrogen-rich, fast-releasing fertilizer. Instead, mulch grass clippings when you mow and apply compost once or twice per year.

But what about all of the weeds that can ravage a yard, especially during the summer months? Thick, healthy turfgrass is the best defense because it won't allow weeds to take root in the first place. Overseeding thin spots in the lawn will help maintain a thick carpet. In garden beds, a layer of mulch, whether bark chips or mulched leaves, will keep weeds down and retain moisture in the soil.

Even with those precautions, some weeds are bound to infiltrate your property. Blasting them with Roundup isn't the best idea because the health effects of glyphosate, an active ingredient, and other herbicides like it aren't fully understood. (The International Agency for Research on Cancer, a division of the World Health Organization, recently determined that glyphosate is a probable carcinogen.)

The following chart offers a list of 10 common weeds and pests that plague homeowners nationwide, along with chemical-free measures that should be effective in bringing them under control. For more information, go to the websites of Beyond Pesticides (beyondpesticides.org) and the Great Healthy Yard Project (tghyp.com).

WEEDS

Dandelion

WHAT IS IT? A perennial weed whose common yellow flowers turn to windblown seed.

TELLTALE SIGNS Though a handful of dandelions is no big deal, a lawn that's ablaze in yellow has underlying problems that need to be addressed.

HOW TO TREAT Like many broadleaf weeds, dandelions prefer compacted soil, so going over the lawn with a core aerator (available for rent at home centers) might eradicate them. It also helps to correct soil imbalances, especially low calcium.

Crabgrass

WHAT IS IT? An annual weed with a spreading growth habit. It's common in the Northeast, in lawns with poor soil conditions.

TELLTALE SIGNS Lots of bald spots, especially after the first freeze, when crabgrass dies off.

HOW TO TREAT Have your soil tested. Lime or sulfur may be needed to adjust the pH. Aeration is also recommended. Corn-gluten meal, applied in early spring, can be an effective natural pre-emergent herbicide.

Barberry

WHAT IS IT? An invasive shrub

with green leaves and yellow flowers, often found in yards near wooded areas.

TELLTALE SIGNS Left unchecked, the shrub's dense thickets will start to choke off native trees and plants.

HOW TO TREAT Cut back the stems and paint their tips with horticultural vinegar or clove oil (repeated applications may be needed). Burning the tips with a weed torch might also work.

Kudzu

WHAT IS IT? An aggressive climbing vine that's common in parts of the Southeast and the Midwest.

TELLTALE SIGNS The thick vine forms a canopy over trees and shrubs, killing them by blocking out sunlight.

HOW TO TREAT Pull out the vine and, if possible, its taproot. Be sure to bag and destroy the plant or its vines will regeminate. If the root is too thick, paint the stump with horticultural vinegar or clove oil repeatedly, or burn it with a weed torch.

Fig Buttercup

WHAT IS IT? A perennial weed with yellow flowers and shiny, dark green leaves. It's common in many parts of the East, Midwest, and Pacific Northwest.

TELLTALE SIGNS The weed will start to crowd out other spring-flowering plants. It can also spread rapidly over a lawn, forming a solid blanket in place of your turfgrass.

HOW TO TREAT Remove small infestations by hand, taking up the entire plant and tubers. For larger outbreaks, apply lemongrass oil or horticultural vinegar once per week when the weeds first emerge. It might take up to six weeks to eradicate.

Canadian Thistle

WHAT IS IT? An aggressive creeping perennial weed that's found throughout the U.S.

TELLTALE SIGNS Look for outbreaks in vegetable gardens, particularly those with peas and beans.

HOW TO TREAT Repeated hand weeding and tilling of the soil will weaken its extensive root system. Planting competitive crops, such as alfalfa and forage grasses, will keep it from returning.

Phragmites

WHAT IS IT? An invasive grass species found nationwide, especially in coastal wetlands.

TELLTALE SIGNS Dense weeds can crowd out other plant species without providing value to wildlife.

HOW TO TREAT Cut back the stalks and cover the area with clear plastic tarps, a process known as solarizing. Then replant the area with native grasses.

PESTS Grubs

WHAT ARE THEY? A variety of white C-shaped beetles that live in soil and feed on plant roots.

TELLTALE SIGNS Large,

irregular sections of brown turf that easily pull away from the soil.

HOW TO TREAT Release beneficial nematodes into the soil each year; these tiny roundworms feed on grubs. Milky spore powder works longer-term on Japanese grub beetles. If you're up for raising chickens, they eat grubs.

Chinch bugs

WHAT ARE THEY? Insects 1/6-inch long with a gray-black body, white wings, and reddish legs.

TELLTALE SIGNS

Copper-colored patches, usually seen during the summer months.

HOW TO TREAT Give the lawn a little extra water. Prevent thatch by not overfertilizing or cutting grass too short. Remove thatch with a dethatching rake. For small infestations, drench area with soapy water and cover with a white sheet; the bugs will cling to it, making disposal easy.

Bagworms

WHAT ARE THEY? The larval stage of moths, these worms, a half-inch to 3 inches long, hang from the branches of evergreens and ornamental plants.

TELLTALE SIGNS Early signs include brown or stressed needles and leaves. Heavy infestations can defoliate a tree or shrub.

HOW TO TREAT Plant asters or black-eyed Susans nearby. They attract bagworm-killing insects, such as parasitoid wasps and tachinid flies. For major outbreaks, apply *Bacillus thuringiensis*, a naturally occurring bacterium sold at most garden stores.

Sometimes You Just Have to Use Your Hands

When faced with just a few weeds, it's best to remove them by hand. Mechanical tools keep you off your knees, though in the past we found they couldn't always pluck weeds with long taproots, especially from highly compacted soil.

Diane Lewis, whose Great Healthy Yard Project shows homeowners how to maintain attractive yards without chemicals, likes Fiskars' uproot weed

remover, \$30. With its step-down and pullback action, the tool's stainless-steel tines are designed to pull up the weed and root system. "After a good rainfall is the ideal time," Lewis says, "since the loosened soil will give up the whole weed."



Mowing Matters

Keep your edge this summer with these lawn-care tips from our experts:

Maintain the mower.

Have your mower blades sharpened monthly, or at least twice during the mowing season. And clean out clippings and debris after mowing to maintain cutting quality and prevent rusting.

Plan your cut. Mow only dry grass. And don't mow too quickly, especially if you're using the mulching feature on your mower or tractor, because mulchers need extra time to process the grass. Try to alternate directions when you mow; that helps disperse clippings for a cleaner, healthier lawn.

Let the lawn go brown. The color change is merely

an indication that the grass is entering a natural state of dormancy to conserve nutrients. It should green up again after the next rain. Only when grass turns from tan-brown to straw-colored do you need to water it.

Take care on slopes. In addition to being dangerous, driving mowers at higher speeds and making sudden turns over hills tends to tear up turf. With a walk-behind mower, mow side to side. With a tractor or rider, mow straight up and down slopes unless your manual says otherwise. Go especially slow down hills if you own a zero-turn-radius mower.



GRYPE-O-METER

The Latest Eating Fads

One in three Americans has tried an eating trend in the past two years, according to a new Consumer Reports national survey. Among people who followed a plan for more than a week, the most popular regimens included low-carb, gluten-free, and juicing. Fads also come with a downside, as you'll see.

LOW-CARB

55%
HAVE
TRIED IT

CR's Advice. It's fine to cut out refined flour and sugar, but don't try to minimize healthy carbohydrates, such as whole grains. If your body gets less than 50 grams of carbs per day (the amount in two apples) for three to four days in a row, it will start tapping its own fat and muscle for fuel instead of its usual source: glucose derived from carbs.



1 in 4
has detoxed
•
1 in 5
has juiced

CR's Advice. The promise is that those trends will purify or reboot your system. But if they're followed for several days, they can lead to nutritional deficiencies, blood sugar problems, fatigue, and other health conditions.

CLUELESS RESTAURANTS AND SUPERMARKETS

Thirty-six percent of people who have followed an eating trend recently say they get irritated when staff or servers don't know the ingredients in food or how it was prepared.

OTHER BUMMERS, BY THE NUMBERS:

Restaurants that won't accommodate certain eating habits: 20%

Judgment from others: 16%

People's skepticism about an eating trend: 12%

GLUTEN-FREE

34%
HAVE
TRIED IT

WHEAT-FREE

23%
HAVE
TRIED IT

CR's Advice. Unless you have celiac disease, a true wheat or gluten sensitivity, or an allergy, there's no clear medical reason to rid your diet of wheat or gluten—which is also found in some other grains. If you do go gluten- or wheat-free, stick with naturally whole foods.

NO. 1 GRIPE: 'EXPERT' ADVICE

Thirty percent of Americans are highly annoyed by food-related claims from celebs or so-called "medical professionals."

FOR A FEW, REMORSE

Nine percent of Americans hate the guilt associated with eating "forbidden food" in front of someone who's following a diet trend.

FOR MANY, RESOLVE

Twenty-six percent of Americans were able to stick with an eating fad for more than a week.

WE DON'T LIKE

**PEER
PRESSURE**

Eighteen percent of Americans are highly annoyed when others urge them to try eating trends.



ASK OUR EXPERTS

Why Don't Mobile Phones Have Better Voice Quality?

Q. I read with interest the reviews of mobile phones (“The Right Phone for You,” February 2015) and noticed that none of them scored Very Good or Excellent for voice quality. Why is that? One would think that with all of the processing power and precision parts in mobile phones, they could capture and reproduce audio quality as well as their landline counterparts.

—Richard Stuart, Lewiston, ID

A. Cell phones have tiny microphones and speakers that use voice-compression technology, and signals travel a long, winding road between callers. Carriers are beginning to use one of the more promising developments for improving voice quality: high-definition (HD) voice, which transmits calls over wider frequency ranges at a higher number of audio samples carried per second. In the meantime, try one of the following.

- Max out the volume on your phone app (not the same as the “sound” volume for multimedia playback, which won’t raise call volume).
- Check your phone’s Settings menu and trying options such as “noise reduction,” “personal call settings,” and “HD Voice” or “VoLTE.”
- Find the sweet spot of your microphone and your earpiece. It’ll help both sides of a conversation.

Must I Give My Social Security Number to a Medical Provider?

Q. I’ve been telling my wife for more than a decade that even when Medicare is involved, there are strong reasons for not sharing a Social Security number with a medical provider. My understanding is that if you refuse, the provider has the right to refuse service. Is that correct?

—William Patterson, Somerdale, NJ

A. Yes, a doctor has the right to refuse service. But keep in mind that people covered by Medicare have their Social Security number on their Medicare card and that the number is part of (actually, most of) their Medicare ID number. Most other insurers don’t use Social Security numbers to identify people, so if a provider asks for it, you can push back. Talk with your doctor’s office manager if you’re concerned about identity theft. If he or she still



requires the number, then you’ll have to decide whether the value of that provider outweighs the potential security risk.



Do New Front-Loading Washing Machines Still Have Mold Problems?

Q. I’m about to replace my 10-year-old Kenmore HE3t front-loading washing machine. I’m leery of another front-loader because of my constant battle with mold. Have new front-loaders been cured of that problem or should I change to a top-loader?

—Karen Corson, Bel Air, MD

A. Manufacturers have taken various steps to alleviate the problem some front-loading washers have had with mold. That said, because multiple factors could have led to your problem, we can’t guarantee that it won’t happen again. If you’re still interested in a front-loader, read user reviews on ConsumerReports.org (subscription required) to see whether anyone has encountered a mold problem in a model you’re considering. There are a number of HE top-loaders we recommend, but they don’t achieve the same level of performance in our tests that front-loaders do. They may have advantages over front-loaders, however, in terms of loading and unloading, and fewer potential vibration issues.

➔ **WE HAVE MORE THAN 140 EXPERTS ON CALL**
They research, test, and compare—so you don’t have to! Share your toughest questions at ConsumerReports.org/askourexperts ... and watch this space for the answers.

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car buying
process**



**Consumer Reports
recommendation for
qualified vehicles**



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* Guaranteed Savings not available in all states. In these states, a "Target Price" is presented, which reflects a market-based example of what you can reasonably expect to pay for a vehicle with your desired options. Savings is guaranteed by the dealer and not Consumer Reports or TrueCar. Guaranteed Savings may not be available on select models or trims. See site for details.

** Between 4/1/14 and 6/30/14, the average estimated savings off MSRP presented by TrueCar Certified Dealers to users of the Consumer Reports Build & Buy Car Buying Service based on users who configured virtual vehicles and subsequently purchased a new vehicle of the same make and model listed on the certificate from Certified Dealers, was \$2,990 including applicable vehicle specific manufacturer incentives. Your actual savings may vary based on multiple factors including the vehicle you select, region, dealer, and applicable vehicle specific manufacturer incentives which are subject to change. The Manufacturer's Suggested Retail Price ("MSRP") is determined by the manufacturer, and may not reflect the price at which vehicles are generally sold in the dealer's trade area as not all vehicles are sold at MSRP. Each dealer sets its own pricing. Your actual purchase price is negotiated between you and the dealer. Neither TrueCar nor Consumer Reports brokers, sells or leases motor vehicles. Service not available in Canada.

The UPDATE

DECODE THE LABEL

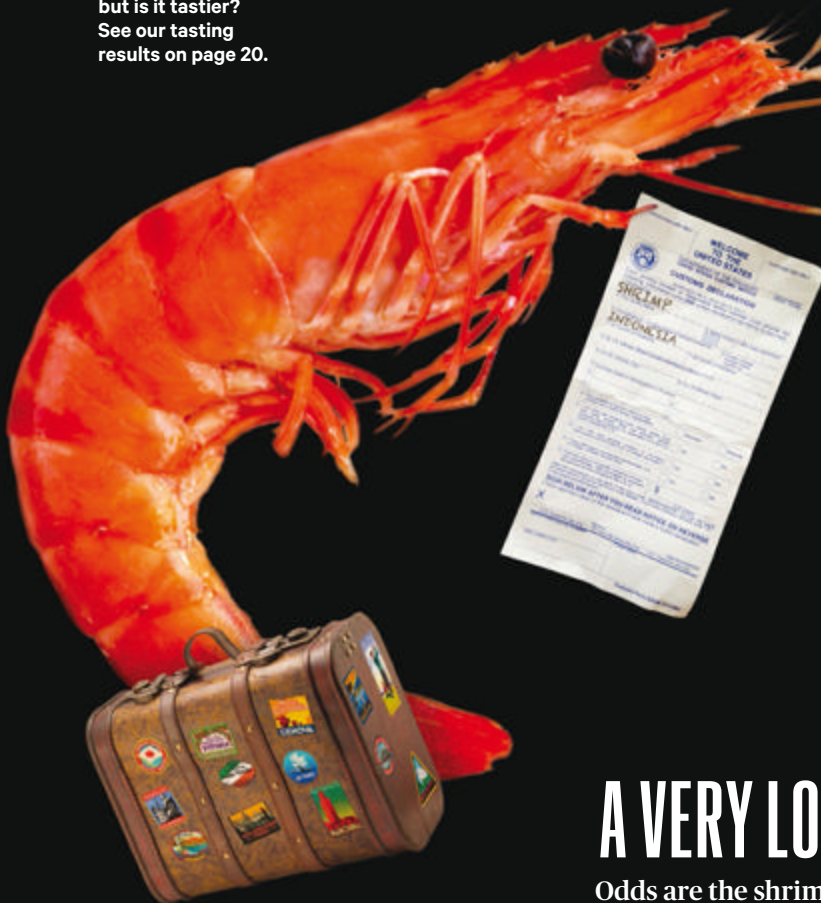
Words such as 'natural' and 'organic' mean absolutely nothing on shrimp. See page 23 for helpful labeling.

WILD OR FARMED?

Wild can be pricier—but is it tastier? See our tasting results on page 20.

NICE ON ICE

It may look fresh, but most shrimp sold in the U.S. was frozen at one point.



A VERY LONG JOURNEY

Odds are the shrimp on your dinner plate started life in a factory pond in Indonesia or India; to make the safest choices, start reading on page 18.

ILLUSTRATION BY DAVID GOLDIN

How Safe Is Your Shrimp?

Consumer Reports' guide to choosing the healthiest, tastiest, and most responsibly sourced shrimp

AMERICANS LOVE SHRIMP. Each of us eats, on average, almost 4 pounds per year, making shrimp more popular than tuna. Once considered a special-occasion treat, shrimp has become so ubiquitous that we now expect to find it on the menu whether we're at a pricey steak house or a fast-food joint.

In fact, Americans eat about three times more shrimp than we did 35 years ago. To satisfy our insatiable appetite, the U.S. has become a massive importer: About 94 percent of our shrimp supply comes from abroad, from countries such as India, Indonesia, and Thailand.

But our love affair with shrimp does have a downside. Most of the shrimp we import is "farmed"—grown in huge industrial tanks or shallow, man-made ponds that can stretch for acres. In some cases 150 shrimp can occupy a single square meter (roughly the size of a 60-inch flat-screen television) where they're fed commercial pellets, sometimes containing antibiotics to ward off disease. If ponds aren't carefully managed, a sludge of fecal matter, chemicals, and excess food can build up and decay. Wastewater can be periodically discharged into nearby waterways. "Bacteria and algae can begin to grow and disease can set in, prompting farmers to use drugs and other chemicals that can remain on the shrimp and seep into the

surrounding environment," says Urvasi Rangan, Ph.D., executive director of the Consumer Reports Food Safety and Sustainability Center. Those shrimp-farming practices raise a variety of concerns—not just about how safe shrimp are to eat but also about the environmental damage that can be caused by farming them that way.

For shoppers the dilemma starts at the grocery store, where it's difficult to know what to buy. Labels and names can be confusing, meaningless, or—worse—deceptive. Sellers may not always tell (or even know) the truth about the origins of the shrimp they offer. And the allure of a label proclaiming that shrimp are "natural" or "wild" can obscure the fact that some expensive varieties aren't necessarily fresher or more flavorful.

That's why Consumer Reports decided to take an in-depth look at shrimp from a testing, tasting, and shopping viewpoint. We unearthed some worrisome findings, including bacteria and antibiotic residues on some samples. But there was also good news, in that there are plenty of healthful choices available.

There's no foolproof way to make sure you won't get sick from the bacteria on shrimp, but following our safe-prep rules will certainly improve your odds. And to make sure you're buying the cleanest,

The 8,000-Mile Trip to America's Dinner Plate

Most of our shrimp is imported, and the majority of it is farmed. Farming can be done responsibly, but when it isn't, a variety of unhealthy, environmentally hazardous, and unappetizing problems can arise, like the ones below.



1. A Shrimp Pond in Asia or South America Trouble can begin before a farm is stocked with a single shrimp; to make way for ponds, natural coastal areas can be damaged. Tens of thousands of shrimp hatchlings may be added, and the crowded farm can produce a vast amount of waste. If the farm isn't managed properly, bacteria can grow and disease can break out.

2. What's in That Pond To keep ponds productive and control disease, overseas farmers sometimes use antibiotics and other chemicals. The Food and Drug Administration requires processors to ensure that shrimp intended for the U.S. market aren't raised with unapproved substances. "But enforcement is practically nonexistent," says Jean Halloran, director of food policy initiatives for Consumers Union, the policy arm of Consumer Reports. The FDA regularly inspects fewer than 2,000 of the hundreds of thousands of foreign facilities that export food to the U.S. each year.



3. The Processing Plant This is where shrimp are deheaded, shelled, deveined, and packed into tidy packages. The FDA requires processors to identify potential health hazards in their own plants. "But some of the bacteria we found, such as staphylococcus aureus, can come from handling," says Michael Crupain, M.D., M.P.H., director of the Consumer Reports Food Safety and Sustainability Center. "This suggests that processors may not be practicing good hygiene, such as washing hands or wearing gloves."

most responsibly fished or raised shrimp—and that you’re getting what you pay for at the fish counter—use our guide on these pages.

What Our Tests Showed: Bacteria and Other Problems

Despite America’s massive intake of shrimp, the Food and Drug Administration tested only 0.7 percent of foreign shrimp shipments last year. To do our own testing, Consumer Reports bought 342 packages of frozen shrimp—284 raw and 58 cooked samples—at large chain supermarkets, big-box stores, and “natural” food stores from 27 cities across the U.S. (We didn’t include fresh, never-frozen shrimp because they account for only a small percentage of the shrimp that consumers buy.)

We tested for bacteria such as salmonella, vibrio, staphylococcus aureus, and E. coli. We also looked for drug residues to see whether antibiotics were used in raising the shrimp. Antibiotics—none of which are approved by the U.S. for shrimp farming—are problematic because their use can ultimately lead to bacteria becoming antibiotic-resistant, meaning that at some point the antibiotic may no longer work to treat common human ailments.

Our findings provided some cause for concern. In 16 percent of cooked, ready-to-eat shrimp, we found several bacteria, including vibrio and E. coli. Those bacteria can potentially cause illnesses such as food poisoning—which could include diarrhea and dehydration—and, in rare instances, can even prove fatal. In 11 samples of raw imported farmed shrimp, we detected antibiotics. And in seven raw shrimp samples (six farmed and one wild), we found MRSA—methicillin-resistant staphylococcus aureus, a bacteria that

can cause infections that are often difficult to treat.

Overall, 60 percent of our raw shrimp tested positive for bacteria, but it’s important to keep those findings in perspective. By comparison, in 2013, when we tested raw chicken breasts, 97 percent of the samples contained bacteria, says Rangan, who oversaw both the shrimp and chicken studies.

Compared with the chicken samples, far fewer shrimp contained salmonella, which is often responsible for outbreaks of food poisoning. But concerningly, we found vibrio on many shrimp samples. “Vibrio is the most common cause of food poisoning from eating raw oysters,” Rangan says. “And even though most bacteria on shrimp would be killed during the cooking process, our test results raise real questions about how shrimp is raised, processed, and regulated.”

Should You Buy Farmed Shrimp at All?

The shrimp business can be extraordinarily lucrative when it’s done on a large scale. A medium-sized shrimp farm in Southeast Asia can produce close to a million pounds of shrimp per year—a powerful incentive for farmers to maximize production.

But evidence shows that those vast overseas operations may use antibiotics similar to those that humans rely on to treat infections. For example, they may use tetracyclines. Although many countries permit the use of antibiotics for shrimp farming, foreign shrimp destined for the U.S. market are not allowed to be raised using them. In addition, overseas shrimp farmers may also be using pesticides such as toxic organophosphates, and antifungals such as Gentian violet, which may cause cancer. Not only aren’t those



4. Welcome to America The FDA examines only 3.7 percent of the shrimp shipments coming into the country—and “examined” may simply mean reading the shipping label, not actually testing the shrimp. In 2014 the FDA tested just 0.7 percent of foreign shrimp shipments. In Consumer Reports’ tests, several farmed shrimp from Thailand, Vietnam, and Bangladesh tested positive for antibiotics, and 28 percent of uncooked shrimp tested positive for vibrio, a potential pathogen.



5. Your Supermarket in Anytown, U.S.A.

Supermarkets are required to specify where shrimp comes from. But because of complexities in the law, the package may not list every stop along the way, especially if the shrimp is breaded or otherwise “substantially transformed.” See Consumer Reports videos on shrimp at ConsumerReports.org/cro/shrimp0615.

DIRTY SHRIMP: WHAT WE FOUND

Consumer Reports tested 284 samples of raw shrimp purchased at stores around the country and tested them for bacterial contamination. The last column shows the percentage of samples that contained at least one of the following bacteria: vibrio, staphylococcus aureus, E. coli, listeria, or salmonella—bacteria that can potentially make you sick. Our experts say more should be done to prevent contamination, but note that cooking should kill the bacteria.

COUNTRY OF ORIGIN	PRODUCTION TYPE	NO. OF SAMPLES TESTED	PERCENT WITH BACTERIA
Bangladesh	Farmed	12	83%
India	Farmed	43	74%
Indonesia	Farmed	36	69%
Ecuador	Farmed	18	61%
Vietnam	Farmed	40	58%
Thailand	Farmed	41	42%
Argentina	Wild	12	33%
U.S.	Wild	55	20%

chemicals permitted by the U.S. for shrimp farming, but they can also put your health at risk and damage the environment.

One reason farmers turn to antibiotics is that shrimp in crowded farms are extremely susceptible to diseases, such as Early Mortality Syndrome (EMS), which can wipe out entire harvests. In 2013, EMS was reported to have reduced Thailand's shrimp output by 50 percent. But there's a strange illogic here: According to Donald Lightner, Ph.D., a professor of veterinary science and microbiology at the University of Arizona, EMS doesn't respond to antibiotics. In fact, our experts say that some of the most devastating shrimp diseases are caused by viruses, against which antibiotics don't work.

When it comes to safety and sustainability, responsibly caught U.S. wild shrimp is our top choice.

It's the FDA's job to inspect shrimp coming into the U.S. to make sure it doesn't contain any drugs or chemicals that aren't permitted in imported shrimp. But in our tests, 11 samples of farmed shrimp from Vietnam, Thailand, and Bangladesh tested positive for one or more antibiotics: Nine tested positive for oxytetracycline, three contained enrofloxacin, and two contained sulfa antibiotics. According to the FDA, if those drugs had been detected in even one shrimp, the entire shipment would have been refused entry into the U.S.

The small quantities of antibiotics we found probably wouldn't affect a typical consumer's health, says Michael Crupain, M.D., M.P.H., director of the Consumer Reports Food Safety and Sustainability Center. But farming shrimp with antibiotics has the potential to cause harm down the road: Antibiotics don't kill off all bacteria, and those that *do* survive can multiply. If those resistant bacteria cause infections, certain antibiotics that once treated them will no longer work. What's more, resistance can be transferred to other bacteria, including those that cause common human infections. In fact, the national Centers for Disease Control and Prevention estimates that antibiotic-resistant infections contribute to 23,000 deaths and more than 2 million illnesses in the U.S. each year.

We found the antibiotic-resistant bacteria MRSA on six samples of farmed shrimp from Vietnam, Bangladesh, and Ecuador, and on one wild sample from the U.S. MRSA can make you sick. "It's spread through contact, so if MRSA gets on your skin while you're preparing raw shrimp, it can potentially cause an infection, especially if you have an abrasion or cut," Crupain says. MRSA causes serious skin and blood infections. And about 11,000 people in the U.S. die as a result of MRSA each year. We found more MRSA on shrimp than we found

SHRIMP BY THE NUMBERS

18

Million

Number of servings of cooked shrimp Americans eat daily

10

Number of legs on a shrimp, making them decapods

1

gram

Amount of fat in 3 ounces of cooked shrimp

4,000+

Number of different types of shrimp known to exist

19

grams

Amount of protein in a 3-ounce serving of cooked shrimp



in our studies of pork, chicken, and ground turkey.

So which farmed shrimp should you buy? Consumer Reports recommends buying farmed shrimp raised without chemicals, including antibiotics. That can include shrimp farmed in large outdoor ponds that mimic the natural habitat or in tanks that constantly filter and recycle water and waste. Consumer Reports has evaluated organizations and stores that certify whether farmed shrimp—both domestic and imported—have been raised without drugs and chemicals. We recommend farmed shrimp labeled Naturland, Aquaculture Stewardship Council, or Whole Foods Market Responsibly Farmed. Another common certification is Best Aquaculture Practices, but we found antibiotics on four samples with that label.

Are Wild Shrimp a Better Choice?

One reason farmed shrimp is so popular is that it can be cheaper than wild shrimp, which is caught in the ocean. Our tests suggest that wild shrimp from U.S. waters may be worth the higher price. Of all the shrimp we tested, they were among the least likely to harbor any kind of bacteria or contain chemicals.

But it's worth considering the environmental implications of going wild. According to Amanda Keledjian, a marine scientist at the nonprofit conservation group Oceana, "Nets dragged along the ocean floor can severely damage the sea bottom and anything that lives there." Estimates vary, but at least 1 to 3 pounds of other species—including endangered sea turtles—can be killed for every pound of shrimp caught in the wild. To minimize the impact, a U.S. federal law requires shrimpers, with some exceptions, to outfit their nets with devices that allow other sea life to escape. But, says Rangan, "A law on Louisiana's books prohibits the enforcement of those rules."

Still, when it comes to safety and sustainability, responsibly caught U.S. wild shrimp is our top choice. Consumer Reports recommends buying wild shrimp certified by the Marine Stewardship Council, an organization that ensures shrimpers are fishing responsibly; shrimp from Whole Foods Market; and those listed as "Best Choices" or "Good Alternatives" on Monterey Bay Aquarium's Seafood Watch Guide, at seafoodwatch.org.

Which Tastes Better—Wild or Farmed?

Shrimp connoisseurs, from celebrity chefs to seasoned shrimpers, claim to detect a striking difference between wild and farmed shrimp, and there's some science to support their claims. The CSIRO Division of Food Science and Technology in Sydney analyzed wild and farmed shrimp to investigate why they can taste different. Sure enough, wild shrimp had far higher levels of compounds called bromophenols, which the researchers equated with a "briny, oceanlike" flavor.

SIX POPULAR SHRIMP



WHITE SHRIMP (*Litopenaeus setiferus*)

Description

White shrimp are prized for their sweet, tender meat and easy-to-peel shells. Commercial fishing for these warm-water critters began in 1709.

Where It's From

They're harvested from North Carolina to Texas, with most from the Gulf of Mexico and Mississippi River Delta in Louisiana.



WHITELEG SHRIMP (*Litopenaeus vannamei*)

Description

Whiteleg shrimp, also called Pacific white shrimp, have a translucent body that often has a bluish-green hue.

Where It's From

They are native to the eastern Pacific Ocean, but they're farmed in the U.S. and abroad.



BROWN SHRIMP (*Farfantepenaeus aztecus*)

Description

Brown shrimp have reddish-brown shells with dark green and red tail-fan appendages. Along with white shrimp, they are the most commonly sold U.S. wild-caught shrimp.

Where It's From

They come primarily from the Gulf of Mexico and may also be called summer, redtail, or golden shrimp.



ROCK SHRIMP (*Sicyonia brevirostris*)

Description

Rock shrimp are often called the "little shrimp with a big lobster taste." Named for their rock-hard shells, they were viewed as a throwaway catch until a machine was developed in the late 1960s to split their tough shells and devein them.

Where It's From

Most of the U.S. catch comes from the east coast of Florida near Cape Canaveral.



SPOT PRAWN (*Pandalus platyceros*)

Description

Spot prawns are the largest cold-water shrimp sold and tend to be expensive.

Where It's From

They are wild-caught off the coasts of Alaska, California, Washington, and British Columbia.



TIGER SHRIMP (*Penaeus monodon*)

Description

Also known as giant tiger prawn and black tiger shrimp or prawns. They are the most important farmed seafood commodity in Asia in terms of financial value. The U.S. is one of Asia's main export markets.

Where It's From

These relatively large shrimp live along the coasts of Australia, South East Asia, South Asia, and East Africa.

How to Choose

WILD When buying wild shrimp, look for shrimp that are certified by the Marine Stewardship Council. We also recommend wild shrimp listed as "Best Choice" or "Good Alternative" at seafoodwatch.org/ seafood-recommendations. Avoid shrimp caught in Louisiana—the only state that does not enforce the federal law requiring shrimpers to use a device that allows sea turtles to escape from shrimp nets.

FARMED When buying farmed shrimp, look for shrimp with these certifications: Naturland, Aquaculture Stewardship Council, or Whole Foods Responsibly Farmed.



FOR MORE ON LABELS YOU CAN TRUST, see "The Lowdown on Shrimp Labels," on page 23.

Truth, Lies, and Crustaceans

We wanted to find out what fishmongers really know about the shrimp they're selling, so our mystery shoppers went shopping for shrimp near our Yonkers, N.Y., headquarters. Here are a few choice tidbits fish sellers told us:

We Asked "Are these shrimp organic?"

The Seller's Answer "Yes, they're organic."

The Truth There are no organic standards for shrimp, or for any seafood, in the U.S.

We Asked "Why is wild shrimp more expensive?"

The Seller's Answer "Wild shrimp is more expensive because it's better for you."

The Truth According to our dietitians, farmed and wild shrimp have the same basic nutritional

profile. But from a safety and sustainability standpoint, this fishmonger is right; our experts say that sustainably fished U.S. wild shrimp is the best choice.

We Asked "Why are antibiotics used in shrimp farming?"

The Seller's Answer "Antibiotics are used to make the shrimp taste better."

The Truth Antibiotics are used

to combat or prevent disease—but shouldn't be.

We Asked "Should I wash my hands after handling raw shrimp?"

The Seller's Answer "No, you don't have to wash your hands after handling shrimp."

The Truth You should always wash your hands after touching raw shrimp. It can harbor bacteria that could make you sick.

But don't assume that briny means better. To conduct a small tasting, Consumer Reports purchased 24 packages of seven types of frozen shrimp from Whole Foods Markets near our Yonkers, N.Y., headquarters. They included Atlantic white, Key West pink, and Gulf white shrimp, all caught in the U.S., as well as farmed shrimp from Thailand, Ecuador, and Vietnam. Sizes varied, but the difference in price was startling; it ranged from \$10 per pound for farmed shrimp from Ecuador to \$19.99 per pound for wild-caught Gulf white shrimp and wild-caught Key West pink shrimp.

Overall, our tasters found very little difference between the farmed and wild shrimp. But they did note that some wild shrimp had a taste of iodine—a flavor that our experts say is probably due to higher levels of bromophenols. The intensity of that flavor varied; it was stronger in shrimp from the Gulf of Mexico and milder in shrimp from the Florida Keys and the Atlantic.

"Nutritionally, whether you choose wild or farmed shrimp, they pack the same major nutrients," says Amy Keating, R.D., a nutritionist at Consumer Reports. In a 3-ounce serving of cooked shrimp, you'll get 101 calories, 19 grams of protein, 1 gram of fat, and 179 milligrams of cholesterol, making shrimp a healthy, low-fat source of protein.

Can You Trust the Labels on Shrimp?

Not always. "If a shrimp label says 'Organic,' ignore it," Rangan advises. "There are no U.S. standards for the organic label when it comes to seafood, unlike for produce and meat." The same goes for labels proclaiming that a package of shrimp is "Natural" or "Environmentally Aware." We also picked up a bag of shrimp

labeled "Chemical-free" (a claim that is not regulated), which tested positive for the antibiotics oxytetracycline and sulfamethoxazole. "Antibiotics are chemicals," Rangan says. "Producers should be honest about how their shrimp is raised."

The Department of Agriculture requires supermarkets and warehouse clubs to state whether shrimp is wild or farmed, along with its country of origin. But a 2014 Oceana study found that even those common classifications can be inaccurate. Oceana bought 143 shrimp samples from 111 vendors nationwide and ran DNA tests to figure out exactly what type, or species, they'd purchased. It turned out that 30 percent of the labels were misleading in some way. For example, in some cases farmed white-leg shrimp (the most commonly farmed shrimp globally) were sold as wild shrimp. "This is seafood fraud, especially given the far higher price of wild shrimp," says study author and senior scientist Kimberly Warner, Ph.D. Oceana even found a small banded coral shrimp, which is not meant to be eaten, mixed into a bag of salad-sized shrimp.

How can a consumer make smart choices given those shady shrimp sellers? Marianne Cufone, an environmental attorney and executive director of the Recirculating Farms Coalition, says there are some clues that might help you distinguish wild from farmed. "Wild shrimp often vary in size, shape, and color because they don't all have identical genetics," she says. "Batches of farmed shrimp often all hatch at the same time, eat the same food, and live in the same environment, so they're more likely to look the same." Cufone's second tip: "Look for poop, or what is politely called a vein." Frequently, shrimp farmers stop feeding shrimp before harvesting them so that the vein empties. If you see a dark line, there's a better chance it's a real wild shrimp.

SAFE SHRIMP PREP

Even with the best possible shrimp, proper kitchen handling is important. From store to stovetop, oven, or barbecue, here's how to handle and prepare it safely:

Keep it cold. Bacteria multiply at temperatures above 40° F, so don't let shrimp warm up before cooking. Make them one of the last items you place in your grocery cart. And if you're buying shrimp at the seafood

counter, ask for a bag of ice to keep them chilled. Consider keeping a cooler in your car for the ride home. Then put the shrimp on ice or in the fridge until you're ready to cook them.

If you buy them frozen, defrosting and refreezing will degrade the quality but shouldn't pose a health risk as long as they remain below 40° F.

Work quickly when shelling or deveining so that shrimp spend less time in your warm hands. Keep them on ice or in a bowl of ice water whenever possible.

Dispose of uncooked veins and shells properly to contain any bacteria on them.

Immediately wash your hands and any kitchen utensils that have come in contact with raw shrimp. That reduces the risk of spreading bacteria from the shrimp to any other food you're serving.



Which Is Better: 'Fresh' or Frozen?

Another confusing choice for consumers is whether to buy frozen shrimp or the "fresh" shrimp at the seafood counter. For the most part, it doesn't really matter. If you're buying from a gourmet seafood store or seaside market, you may find truly fresh shrimp. But the majority of shrimp are frozen soon after they are caught. Steven Wilson, deputy director of the NOAA Fisheries Office of International Affairs and Seafood Inspection, says there's a chance that the glistening tray of shrimp at the seafood counter in your store was previously frozen, then thawed. In fact, it may be the same shrimp that's in the freezer case—just defrosted.

Raw or Cooked?

According to a 2015 Consumer Reports National Research Center survey of 1,015 U.S. adults, more than a quarter of buyers prefer their shrimp precooked. Though buying cooked shrimp may be convenient, it does not guarantee safety. In our tests, we found concerning bacteria, including vibrio and staphylococcus aureus, in a few of our cooked samples. If you want to be extra careful, you can buy raw shrimp, handle it properly, and cook it yourself to kill any bacteria.

Note: Funding for this project was provided by The Pew Charitable Trusts. Any views expressed are those of Consumer Reports and its advocacy arm, Consumers Union, and do not necessarily reflect the views of The Pew Charitable Trusts.



The Lowdown on Shrimp Labels

Here's what to look for in labels. We believe that your best choice is responsibly caught U.S. wild shrimp, including those recommended by seafoodwatch.org.

TRUST



MARINE STEWARDSHIP COUNCIL indicates that wild shrimp are caught using sustainable fishing practices. This can include outfitting nets with devices that allow other animals to escape.



AQUACULTURE STEWARDSHIP COUNCIL indicates shrimp are raised without antibiotics and according to guidelines that protect the environment. This label also ensures that shrimp farms do not use forced labor. However, the guidelines permit the use of certain chemicals, including some pesticides, and don't limit the number of shrimp in a pond.



NATURLAND indicates that shrimp are farmed following guidelines that prohibit overstocking of shrimp ponds and the use of chemicals, including antibiotics, pesticides, and disinfectants. Shrimp are fed food made of sustainably caught fish meal, and farms do not use forced labor.



WHOLE FOODS MARKET RESPONSIBLY FARMED certifies that shrimp are raised in conditions that protect the environment, without antibiotics, and with limited use of chemicals. But there's no limit on the density of shrimp in ponds. This label is found only at Whole Foods Market stores.

DON'T TRUST

TURTLE SAFE This claim is not backed by a consistent set of standards.

NATURAL This term has no official definition for shrimp. Ignore it.

ORGANIC There is no approved standard for organic seafood in the U.S.

SUSTAINABLE There is no regulated definition of "sustainable." Any seller can make this claim.

ENVIRONMENTALLY AWARE An easy claim to make, but it's not backed by a consistent set of standards to ensure that shrimp were sustainably caught or farmed.

NO HORMONES There is no government or official definition for this term on shrimp.


NO ANTIBIOTICS On meat and poultry, this term means what it says, but when it comes to shrimp, the term is not defined by the FDA.

Where We Stand on Shrimp

About 94 percent of America's shrimp is imported, but in 2014 the Food and Drug Administration examined only 3.7 percent of foreign shrimp shipments. Consumer Reports' own tests found evidence of unhealthy contaminants in store-bought shrimp, including *E. coli* and vibrio (bacteria that can potentially make you sick) and trace amounts of antibiotics that are prohibited in imported shrimp. And although we didn't find every unapproved antibiotic in our tests, there is concern that foreign shrimp farmers may sometimes use them, including chloramphenicol and malachite green. Those farming practices are damaging to the environment and have long-term health consequences for consumers.

To keep consumers safe, Consumer Reports believes the FDA should do the following:

- **Significantly step up inspections** at U.S. ports and at overseas shrimp farms and processing plants that supply shrimp.
- **Increase laboratory testing** of imported shrimp for antibiotics, none of which are permitted. Antibiotic overuse is a problem because it weakens the effectiveness of lifesaving drugs, such as tetracyclines. The FDA should ensure that they are able to detect antibiotics at the lowest levels modern technology allows.
- **Add vibrio** to the list of bacteria the FDA tests for in shrimp. Also require producers to control vibrio contamination, both at shrimp farms and at processing plants that shell, devein, and package shrimp. Freezing is thought to kill vibrio, but 28 percent of the uncooked frozen shrimp samples we tested contained the bacteria.
- **Reject all shrimp imports that test positive** for MRSA—bacteria that can cause infections that are difficult to treat.

 **FIND OUT MORE** about our test results at GreenerChoices.org/shrimp.

In the Privacy of Your Own Home

That smart TV, your connected thermostat, even your washing machine—they're all tracking your daily habits. Why you need to know who's watching.

LAST SPRING, AS 41,000 RUNNERS made their way through the streets of Dublin in the city's Women's Mini Marathon, an unassuming redheaded man by the name of Candid Wueest stood on the sidelines with a scanner. He had built it in a couple of hours with \$75 worth of parts, and he was using it to surreptitiously pick up data from activity trackers worn on runners' wrists. During the race, Wueest managed to collect personal info from 563 racers, including their names, addresses, and passwords,

as well as the unique IDs of the devices they were carrying.

Fortunately, Wueest is not a data criminal. He's one of the good guys—a security researcher at Symantec, the company behind Norton antivirus software. His experiment was done to expose some of the risks associated with the growing constellation of “smart” devices known collectively as the Internet of Things.

Many of those devices are versions of familiar, even friendly, consumer products: thermostats, refrigerators, light switches, televisions, and door locks.

What Rights Should Consumers Expect?

Consumer Reports thinks that manufacturers of Internet-connected devices should tell consumers in easy-to-understand language about the types of information being collected by those devices and how that information could potentially be shared, sold, and used. Device manufacturers

should also give consumers options to control the collection and use of their data. We also support the work of the Federal Trade Commission, whose recent report on the topic states that the agency “... will continue to enforce laws, educate consumers and businesses, and engage

with consumer advocates, industry, academics, and other stakeholders involved in the Internet of Things to promote appropriate security and privacy protections.” The FTC also urges more self-regulatory efforts by industry, as well as better data security and broad-based privacy legislation.



Connected Coffee

The Mr. Coffee Smart Optimal Brew BVMC-PSTX91WE links to a Wi-Fi network and a smartphone app to let users program brew times from anywhere.

But the new versions connect to the Internet and can be controlled through an app on a phone, tablet, or computer. The smart devices communicate with each other, too, and they offer an appealing level of convenience. Your car can tell your home's thermostat to turn on the air conditioning as you're driving home. Your security camera can record a video clip if the smoke alarm goes off. And you can use your activity tracker to control lights in your house.

But that convenience comes with a trade-off: The devices can also send a steady flood of personal data to corporate servers, where it's saved and shared, and can be used in ways you can't control.

Websites and smartphone apps have been following our activities for a long time, tracking where we go; what we read, watch, and buy; what we write in our e-mails; and who we follow on Facebook and Twitter. But now connected devices gather data from some of the most private spaces of our lives—the bedside table, the kitchen counter, the baby's nursery.

Without proper safeguards, all of the data that different devices and sites have collected about you can be combined, then exploited by marketers or stolen by hackers. U.S. Sen. Ed Markey, D-Mass., who released a report on automotive privacy this winter, says the Internet of Things deserves more scrutiny. (For more

on connected cars, see “Can Your Car Get Hacked?” on page 60.) “Whether it is our cars, our thermostats or our household appliances, if these personal devices are connected to the Internet, they are a potential privacy threat,” he says. “Consumers’ most sensitive information is collected and turned into dossiers that are pure gold in the hands of marketers and pitchmen. We need strong, legally enforceable rules ... to ensure personal information is protected.”

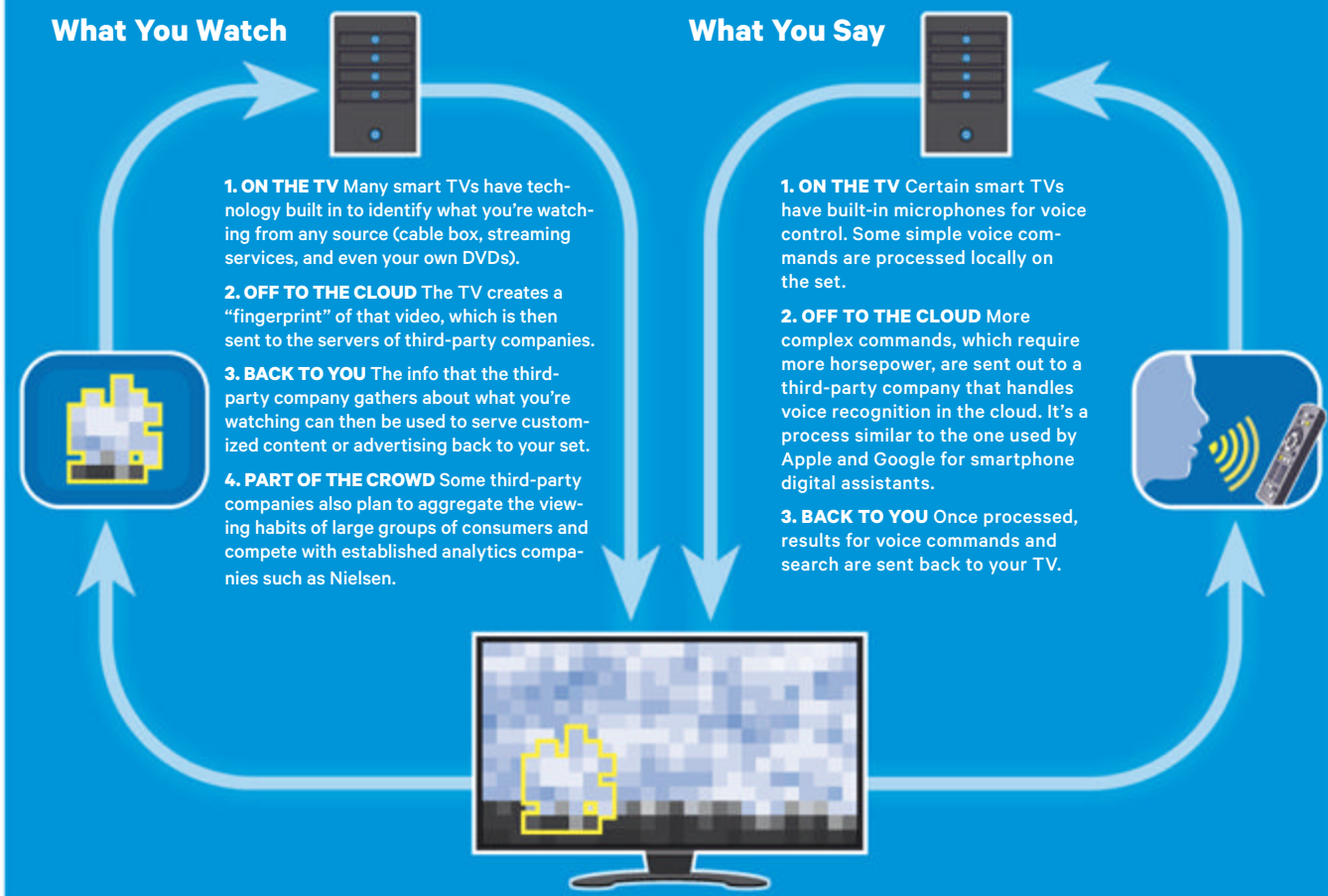
WHY IT MATTERS

Compared with websites and mobile apps, the Internet of Things is in its infancy, but the relatively modest constellation of

What Happens When You Check ‘Agree’

When you click those ubiquitous “I agree” buttons on the privacy policies of many smart TVs from companies such as LG, Samsung, and Vizio, you are allowing your TV to communicate

over the Internet with third parties that analyze your viewing behavior. Some companies also analyze your voice commands. Here's how it works:



The Machines Are Watching

Common household items now have eyes and ears



BABY MONITOR

What it does. Modern multitasking parents check in on their infants via smartphone using fully networked, motion-sensing, HD video-streaming systems with built-in speakers that let them talk to their baby while loading up the washing machine.

That type of right-there access is comforting for a parent, but it's positively sickening if a hacker is also tuning in. The threat isn't theoretical. In January, it was reported that a nanny in Houston heard an unfamiliar voice coming from a two-way baby monitor made by Foscam. According to reports, the voice said, "That's a really pooppy diaper," then warned her to password-protect the camera.

In 2013 and 2014, the British press reported that sadistic hackers took over monitors to scream at sleeping children, and last fall officials in the U.K. warned that live feeds from baby monitors and home security cameras around the world were accessible to the public on the Internet. When Consumer Reports checked recently, we found a site that was still hosting security-camera feeds, including some that appeared to be from people's homes.

What you need to know. An unprotected camera is worse than no camera at all. Internet-connected baby monitors and home security cameras use your home Wi-Fi network, and certain models can communicate directly with a phone using Bluetooth when you're home. Parents need strong passwords on their home network and on the baby monitor itself to keep the feeds secure.



BLOOD GLUCOSE METER

What it does. Blood glucose test results help diabetics manage and treat their condition. Connected meters, such as the OneTouch Verio Sync, send test results to a smartphone app and can even pass the data along to your doctor. The meter can store hundreds of results gathered over time.

What you need to know. When you use one of these devices at a hospital or doctor's office, the medical information it produces is protected by the Health Insurance Portability

and Accountability Act, the law governing the privacy of medical records. But HIPAA doesn't protect your data when you use the devices on your own outside a medical setting. That leaves the burden on consumers to learn how their data is being protected and how it is shared. OneTouch says it encrypts personally identifiable data and health data it transmits from the device. But not all health apps do. In a 2013 Privacy Rights Clearinghouse report analyzing 43 health and fitness apps, researchers found that very few encrypted their data.



THERMOSTAT

What it does. Connected thermostats are like ordinary programmable thermostats on steroids. They may sense when people are home, learn a family's preferred temperature settings, and allow users to make adjustments remotely using a smartphone. Features vary: The Honeywell Lyric employs geofencing—it tracks whether homeowners' phones are nearby—and the Nest programs itself by observing when users are home or away. Nest, which is owned by Google, is courting connected-home partners including LG refrigerators, lock companies, and Dropcam security cameras (also owned by Google).

What you need to know. In order to work, some smart thermostats need to track when you are home. If that unnerves you, you're not going to want one of those products.



COFFEEMAKER

What it does. Ah, the elixir of wakefulness! Anything that makes coffee faster and easier is welcome in many households. The Mr. Coffee Smart Optimal Brew Wi-Fi-connected coffeemaker is one of several appliances that works on Belkin's WeMo platform. It can tell you when your coffee is ready, remind you to set up the machine in the evening, and let you change the brewing delay remotely.

What you need to know. When you interface with your coffee machine via an app, your brewing habits can become the property of the coffeemaker company and the app developer. It may not seem like the most

compromising information, but it's a pretty good indicator of when you're home, when you wake up, and just how on edge you might be. Plus, in our experience with Mr. Coffee's Wi-Fi model, if you turn off the network connection, you won't be able to program the machine.



ACTIVITY TRACKER

What it does. In a fitness-obsessed society like ours, it's tempting to want to calculate every move you make. Activity trackers can record the miles you've walked, how far you've swum, how well you slept, and how quickly your heart has been beating. Some will map out your run using GPS capabilities.

What you need to know. Data transmitted from a tracker to its smartphone app may be sent unencrypted. The information includes the user's name, address, password, and, potentially, GPS data. A burglar—or stalker—armed with that data could surmise that you go out for a run through a nearby park every day at 6 a.m. Activity trackers are used in many corporate wellness programs; some advocates and researchers worry that such initiatives could lead to intrusive monitoring of employee habits in the future.



DOOR LOCK

What it does. Want to let the plumber in while you're away? Leaving a key under the mat is the classic workaround—and it's a bad one. New connected locks allow the user to provide one-time, short-term, or scheduled access to a home. Certain locks even allow the user to unlock the door remotely through a home Wi-Fi network. Connected locks work with the user's own smartphone—so you have fewer items to carry, fumble with, and potentially misplace.

What you need to know. Security researchers have successfully hacked into connected household locks. Certain locks can be linked with home-automation ecosystems, such as Works with Nest and Apple's upcoming HomeKit. The downside to connected-home ecosystems is that they consolidate a lot of your home's data on a single corporation's servers. But those companies are requiring partners to include security and privacy protections.

products out there is already generating a vast amount of information. According to Cisco Systems, the networking giant, there were almost 109 million wearable devices in use around the world by the end of 2014, generating millions of gigabytes of data each month. Those numbers are sure to balloon. Startups and established technology companies such as Apple, GE, Honeywell, IBM, LG, and Samsung are investing heavily in the race to dominate the Internet of Things. Google has recently been on a multibillion-dollar buying spree, purchasing the companies that make Nest thermostats, Dropcam

security cameras, and Revolv connected-home hubs.

In March, Amazon announced its upcoming Dash program, which invites customers to install Wi-Fi connected buttons around their homes. Pressing one of the buttons will automatically order brand-name household supplies, such as Bounty paper towels and Tide detergent. Amazon already has lined up device makers, such as Whirlpool and Brother, who can build that technology directly into their products so that washing machines can order their own detergent and printers can order ink—all from Amazon, of course.

Companies are also offering incentives for consumers to share information from their devices. John Hancock is giving new life insurance customers a free Fitbit and plan discount in exchange for their fitness data. By design, such devices pay close attention to their owners and log many of the daily activities of their lives. Some of the companies that sell those products currently promise not to use the collected data for advertising and promotion. But in the absence of regulation, that can change at any time. Do you want the disappointing readout on your smart scale to translate into ads for diet plans on your smartphone? Maybe you do, maybe you don't—but the choice ought to be yours.

For consumers, it's not always clear what information stays on a connected device and what goes out to the Internet. And when people learn the details, they can get seriously creeped out. When Mattel announced plans to launch Hello Barbie, a Wi-Fi connected doll that holds conversations with children (by using remote servers), parents' groups cried foul. The Campaign for a Commercial-Free Childhood launched a petition aimed at stopping the toy maker from producing the doll. (As we went to press, the doll was still scheduled to hit store shelves in late fall.)

The prospect of ubiquitous, data-collecting smart objects troubles many privacy advocates, including Lee Tien, a senior staff attorney for the Electronic Frontier Foundation. "The selling and renting of your information is routine, it's happening all the time, and people can create a biography of you," he says.

Consumers may or may not worry about being monitored by their appliances—but they need to know if it's happening. And they need to be aware of how the collected information is being used. But it's difficult for most of us to determine just what's going on under the hood of those devices.

WHAT'S HIDDEN IN THE FINE PRINT

Coffeemakers didn't used to need privacy policies. Neither did dishwashers, thermostats, and cars. Yet today, connected versions of those products come with reams of legal language that you're asked



Home, Surveilled Home

The Crock-Pot Smart Slow Cooker SCCPWM-00-V1 (above), Nest Learning Thermostat (right), and Samsung H5203-Series Smart TV (below) all send data from your home out to corporate servers. That enables convenient features but also raises privacy concerns.



to agree to. Arguably, you shouldn't have to read a privacy policy to learn whether an appliance is tracking you—and if you *do* try to read those policies, you'll probably find them difficult to decipher.

An analysis by Consumer Reports in cooperation with Georgetown Law's Center on Privacy & Technology shows that many privacy policies for connected devices are vague, confusing, and sweeping. In the absence of strong privacy laws, that legalese matters, says Alvaro Bedoya, the center's executive director. "Your privacy protections on these devices largely turn on those policies—the little, fine-print promises that companies make about your data," he says.

When the effects of policies are revealed, consumers may be surprised, or even shocked. In February the media reported that LG and Samsung smart TVs allowed those companies to transmit household conversations to third parties. At first blush, the technology seemed truly unsettling; if you and your husband argued over your bills during an episode of "The Voice," would debt-consolidation companies suddenly start texting you?

In reality, sending your living-room chatter to a third-party company is just a matter of technological convenience for the TV makers. One of the features of those high-end TVs is voice control, and no television has the built-in processing power to do complex voice recognition. So when users hit the button on their remotes to engage voice control, the recorded audio is sent out to a partner company. (It's the same basic technology that enables Apple's Siri.) But the privacy policies didn't clearly explain when the TVs were recording or where the voice data was going—nor promise that the data wouldn't be used for other purposes in the future. The backlash caused Samsung, at least, to clarify its privacy policy, although the technology remains functionally the same.

We found other, more intriguing stuff buried in the policies of several smart-TV makers. Many of the sets automatically monitor and identify video that comes across consumers' screens, including broadcast TV, streaming videos, and

even your own DVDs. Our subsequent investigation found that the TVs send the viewing data to partner companies few consumers have heard of, such as Cognitive Networks and Ensvers.

Those companies make no secret of how they plan to use consumer data. In its pitch to advertisers and TV makers, Cognitive's website describes its business this way: "... we enable TV content providers to increase their revenues by offering enhanced advertising opportunities to their customers. And since they're using our [Cognitive's] technology on your [the manufacturers'] TVs, this generates an ongoing revenue stream back to you for every set in market."

In other words, the manufacturer can sell you a TV, then continue to make money by monitoring what you watch and sending customized ads to you, and also selling the aggregate viewing data to advertisers and content providers. It's a potential moneymaker for everybody—except you.

How Smart Devices Work

EXAMPLE: Activity tracker.



Data Collection

Most "smart" devices have a variety of built-in sensors. An activity tracker, for instance, can have an accelerometer for detecting motion and counting steps, a GPS antenna to record your location, and a heart rate monitor to detect your pulse. The data from those sensors can then be transmitted via Bluetooth to an app on your smartphone, which can then send it to servers on the Internet.

THE SECURITY GAP

Even companies that aren't trying to directly monetize your data can be putting consumer privacy at risk. Profiles of user habits and behavior stored on company servers could be subject to data breaches, as Target's and Home Depot's credit-card files were.

And the devices themselves can be vulnerable to hackers. HP Fortify on Demand, a security business owned by Hewlett-Packard, studied 10 connected products in 2014, including TVs, door locks, and home alarms. Daniel Miessler, the unit's head of security research, says that eight of the 10 devices did not require a complex password, seven failed to encrypt data during transmission, and six had user interfaces that were so insecure that attackers could reset passwords.

Poking holes in the security of connected-home devices has become a popular sport among researchers. Last year a security instructor named Joshua Wright took advantage of a vulnerability

in Z-Wave, a wireless standard used to automate home appliances. Using the hack, he was able to open smart locks from several feet away.

Researchers at a startup called Synack said they found security flaws in 16 devices they tested, including cameras, thermostats, and smoke detectors. And HP's Miessler was able to gain control of home security cameras by intercepting and modifying software updates that were being transmitted to the devices.

That type of hacking requires patience and immense expertise—for the first person who attempts it. But hackers share

information. Once a vulnerability has been exposed, any malicious actor with a little bit of technical skill can repeat many hacks. Device makers would do well to learn from the lessons of the computer industry. Good digital security is an act of vigilance, and manufacturers need to constantly update the security of their products as new threats emerge.

PROTECTING OUR FUTURE

Concerns about the Internet of Things have not gone unnoticed by government agencies. The Federal Trade Commission issued a detailed report on the subject

this past January that recommended best practices for companies, such as building security into devices in the design process and requiring strong passwords. Then in March the FTC announced the creation of a new division devoted to those products, declaring that from a security and privacy perspective, particular challenges were posed by “the predicted pervasive introduction of sensors and devices into currently intimate spaces—such as the home, the car,” and wearables.

But laws and policy move slowly, and technology evolves quickly. In March, Facebook launched a platform to help developers create apps for connected devices. Imagine what could happen if the company that mastered the science of turning personal relationships into corporate profit was monitoring the relationship between you and your smart fridge.

“The Internet of Things is perhaps the clearest example of how technology is outpacing our privacy laws,” Bedoya says. “Our laws just aren’t ready for it.”

For now, it’s up to consumers to shape the future of these technologies, by buying only products they feel comfortable with—and speaking up when they don’t like what they see. Smart televisions offer convenience; they can also collect data to help TV makers target viewers with advertising. That may be an acceptable trade-off for some consumers but not for others. As the Internet of Things expands and policies shapeshift, the best consumer-protection advocates may be consumers themselves.

6 Ways to Reduce Your Exposure

If you don’t like the idea of being tracked by your devices, you may think you have only two options: Avoid the technology altogether or simply surrender to the surveillance. But for most smart products, there are strategies that can at least restrict how much of your information gets collected. (See our related video at ConsumerReports.org.)

1. Password-protect anything that collects personal information. Many smart devices are managed through Internet-based accounts. Some have pass codes you can enter on the device as well. Use both. And yes, you do need to pick unique and complex passwords. We suggest at least nine characters in a combination of letters, numbers, and symbols (see our video on creating better passwords at ConsumerReports.org). Also, if you haven’t already done so, make sure to password-protect the settings on your router as well as its Wi-Fi connection.

2. Read the privacy policy. We know they’re often long and indecipherable. But if you want an indication of the kinds of information your device is tracking, that’s where you’ll find it. But bring your legal-to-English dictionary. Remember, however, manufacturers can change their policies at any time. And in case of a data breach, all bets are off. Hackers don’t read those policies, either.

3. Find the “off” toggle in the settings menu on your smart device. Often, features that track you are given a line-item on-off toggle. On smart TVs, for example, you can switch off voice control and “interactive” functionality. If anything seems suspicious to you, turn it off—you can always turn it back on later if it disables a function you need.

4. Don’t leave connected devices on when you’re not using them. Certain Internet-enabled devices

are hooked to the Internet 24/7 by necessity (a smart thermostat, for example), but a connected baby monitor doesn’t need to be streaming video from junior’s crib when your baby is in your arms. Just turn it off.

5. Install security updates. Device makers need to get serious about automatically pushing out security updates. But consumers would be wise to periodically check the manufacturer’s website to see whether their device has a patch, an update, or new firmware. If there is, install it quickly.

6. Take it offline. If Wi-Fi or cellular connectivity in a product doesn’t offer a tangible benefit to you, buy the nonconnected version. If a nonconnected version isn’t available, you can still buy the smart product—just don’t set it up on your Wi-Fi network. It may sound obvious, but it’s worth stating: If a device isn’t connected to the Internet, there’s no snooping and no hacking.

Share Your Story

How is the Internet of Things affecting your life?

Do you own a smart TV, wearable device, connected car, or smart appliance, or are you planning to buy one? We want to hear your thoughts concerning the devices that collect data about you. Are you looking to integrate more connected objects into your life, or are you worried by the prospect of more smart devices in your home? Share your thoughts on the subject with us at ConsumerReports.org/cro/internet0615.



THE ULTIMATE FREQUENT-FLYER GUIDE

To get the flight you want, you need the right info.
That was hard to find—till now. We reveal what the airlines won't tell you.

ABOUT 100 MILLION consumers belong to one or more airline frequent-flyer programs. If you're one of them, you know how many hoops you need to jump through to get where you want to go. There's the difficulty of using your points to find seats for departures and returns, the purgatory of connecting flights, and the one-sided rules that can be changed at an airline's whim, which happened this year when Delta and United devalued the mile-

earning power of most members. Never mind that the "free trip" you're "rewarded" with isn't really a freebie at all—it's built into the price of everything you buy that earns miles. Or that the airlines milk millions in profits each year from accrued miles you've paid for but never use.

But you don't need to get angry—just smart. Our exclusive analysis of 70 million passenger trips over the past two years provides the info that can improve your chances of scoring a reward seat to your dream destination—info the air-

lines would prefer to keep to themselves.

We've compiled statistics on reward-seat availability for the 25 most popular U.S. award routes on the five biggest airlines. They show you the chances of getting a "free" ride and will also help you make a decision about which rewards program to join. We've also calculated the value of a reward seat for each airline and trip so that you can tell which ones are—or aren't—offering you a good deal.

And because there are always gotchas, we advise you on how to sidestep some of the big ones.

Where Do You Want to Go?

In your quest for award travel, you should start with the destination, then work backward. After you decide where you want to go, figure out which airline program gives you the best chance of getting there.

Use our table below to find out which of the largest airlines booked the most award tickets for the 25 most popular U.S. award routes in the fiscal year that ended Sept. 30, 2014, the latest 12 months for which figures are available. (The figures come from a Department of Transportation ticket database.) Although availability varies by day, flight, and destination, our analysis reveals some general trends.

Among hundreds of routes studied, not just the top 25, Southwest offered the most award tickets of any big airline: 11.9 million, or 11.5 percent of total passenger seats. The Dallas-based carrier also did some Texas-sized butt-kicking of rivals by providing the highest percentage of award-seat availability on 72 percent of the 25 most popular U.S. award routes.

"The most frequent pain point for consumers is having all these miles they can't use," says Jonathan Clarkson, director of Southwest's Rapid Rewards program. "We don't hear that much around here." He says the

airline's high availability of rewards is possible because it has fewer restrictions. "Every seat is available as an award seat, even the last seat on the day before Thanksgiving."

In contrast, JetBlue booked the lowest percentage of award seats among the five biggest carriers on all routes studied: only 892,000, or 4.5 percent. The airline says that improvements in its TrueBlue program last year will "take time" to show up as increased award redemptions. "If you fly only once or twice a year, as many of our customers do, the ability to earn an award ticket is not high," says Michael Stromer, vice president of digital loyalty and customer insights at JetBlue. "With our removal of mile expiration dates, people will be better able to build point balances over the couple of years it can take to earn enough for an award."

Overall, our broader analysis of all routes found that the airlines were less tightwadish than you might expect. On average, almost 10 percent of passengers on the largest airlines flew on award tickets. Better yet, the big players opened the gates for many of the most in-demand routes. On the hot Los Angeles-New York run, for example, United flew

Top 25 Routes

Listed in alphabetical order.

		AMERICAN					DELTA				
		Satisfaction Score: 66					Satisfaction Score: 70				
City 1	City 2	Use your points	% of tix that are awards	Average value of each FF mile	Average one-way coach fare	Average miles needed one way	Use your points	% of tix that are awards	Average value of each FF mile	Average one-way coach fare	Average miles needed one way
Atlanta	New York		8.0	0.8¢	\$192	21,250		7.7	0.8¢	\$256	21,250
Chicago	New York		8.9	0.8¢	\$229	21,250		6.0	0.8¢	\$242	21,250
	Los Angeles	✓	9.3	1.1¢	\$260	21,250	✓	9.0	1.1¢	\$267	21,250
	Miami	✓	11.8	1.0¢	\$264	21,250	✓	6.3	1.0¢	\$209	21,250
	San Francisco	✓	8.6	1.1¢	\$264	21,250	✓	9.0	1.1¢	\$271	21,250
	Washington, D.C.		10.1	0.8¢	\$211	21,250		8.7	0.8¢	\$209	21,250
	Orlando		10.6	0.9¢	\$216	21,250		9.2	0.9¢	\$220	21,250
	Phoenix		10.2	0.9¢	\$213	21,250		7.0	0.9¢	\$198	21,250
	Las Vegas	✓	10.6	1.1¢	\$262	21,250	✓	13.0	1.1¢	\$293	21,250
Dallas	New York	✓	13.3	1.0¢	\$350	21,250	✓	7.8	1.0¢	\$314	21,250
	Los Angeles		10.0	0.9¢	\$259	21,250		9.0	0.9¢	\$251	21,250
Denver	Los Angeles		9.3	0.7¢	\$195	21,250		6.6	0.7¢	\$193	21,250
Detroit	New York	✓	23.1	1.0¢	\$213	21,250	✓	19.2	1.0¢	\$261	21,250
Houston	New York		7.6	0.9¢	\$216	21,250		8.3	0.9¢	\$296	21,250
Las Vegas	Los Angeles		6.9	0.4¢	\$122	21,250		10.3	0.4¢	\$134	21,250
	New York	✓	10.6	1.1¢	\$318	21,250	✓	8.9	1.1¢	\$322	21,250
Los Angeles	New York	✓	20.9	1.1¢	\$422	21,250	✓	14.5	1.1¢	\$343	21,250
	San Francisco		6.5	0.5¢	\$126	21,250		3.6	0.5¢	\$121	21,250
	San Jose		5.4	0.6¢	\$139	21,250		2.8	0.6¢	\$125	21,250
	Sacramento		7.6	0.5¢	\$155	21,250		4.0	0.5¢	\$141	21,250
	Phoenix		6.1	0.7¢	\$155	21,250		6.7	0.7¢	\$140	21,250
Miami	New York		9.4	0.8¢	\$222	21,250		6.9	0.8¢	\$206	21,250
New York	San Francisco	✓	19.6	1.2¢	\$398	21,250	✓	9.6	1.2¢	\$345	21,250
	Orlando		14.7	0.8¢	\$178	21,250		5.3	0.8¢	\$188	21,250
San Diego	San Francisco		8.9	0.7¢	\$159	21,250					

How We Crunched the Numbers

We hired GRA, an airline consulting firm in the Philadelphia area, to dig up U.S. award-seat estimates by route and airline using data on ticket sales from the 10 percent sample that airlines are required to report to the Department of Transportation.

Award tickets aren't specifically identified as such in the database, but likely awards show a \$0 fare plus government fees of up to \$25 each way. So GRA sifted through almost 70 million U.S. passenger trips for the latest 12 months available, from October 2013 through

12 percent of its passengers on award tickets, Delta 14.5 percent, American 21 percent, and Southwest 23 percent. One surprise: Despite an improving economy, which tends to fill seats that would otherwise be available for award travel, we found the opposite, mostly. The airlines booked 26.9 million one-way award trips in fiscal 2014, almost 3 million more than over a similar period that ended Sept. 30, 2013. Four of the five carriers increased awards; the one exception was United, which booked 253,000 fewer awards and let redemptions drop from 10.2 percent to 9.8 percent of all tickets. American, JetBlue, and United didn't comment on our findings. Southwest said its own data "corresponds pretty well" with ours. And Delta said our analysis "does not include the full value story for our customers" because it doesn't cover SkyMiles international awards on Delta and 27 mostly foreign partner airlines.

How to use this chart

Check the route. They're the 25 most popular routes between two cities on the five biggest U.S. airlines (excluding US Airways).

Look for a check mark to decide: Use your frequent-flyer miles or pay cash. We've given check marks to trips we think are a good value because at least you get what you paid into the deal: 1 cent per mile. The values shown were estimated by dividing the lowest average airline fare for the route by the average of the highest and lowest mileage charge that each airline levied for award tickets in fiscal 2014.

Assess your odds of getting that trip. The second column tells you the percentage of reward trips given on that route.

Check the Satisfaction Score just below the airline name. It's the overall satisfaction level reported by Consumer Reports readers.

Do your own calculations. Our value numbers are only a broad indicator of worth. Because mile requirements differ based on when and where you want to go and can change at any time, you should do a similar calculation using specific flights and what you'd be charged in miles vs. dollars. To get that figure, divide each ticket's one-way or round-trip dollar price by its mileage cost. If you get a value of less than 1 cent per mile, pay in cash. The greater the value above that, the better off you are paying in miles.

✓ Use Your Points

JETBLUE						SOUTHWEST					UNITED				
Satisfaction Score: 85						Satisfaction Score: 86					Satisfaction Score: 63				
Use your points	% of tix that are awards	Average value of each FF mile	Average one-way coach fare	Average miles needed one way		Use your points	% of tix that are awards	Average value of each FF mile	Average one-way coach fare	Average miles needed one way	Use your points	% of tix that are awards	Average value of each FF mile	Average one-way coach fare	Average miles needed one way
						✓	6.4	1.2¢	\$177	15,045		10.3	0.9¢	\$302	18,700
✓	4.1	1.3¢	\$192	13,714		✓	9.8	1.2¢	\$176	14,960		9.2	0.9¢	\$272	18,700
						✓	13.5	1.2¢	\$228	19,380	✓	9.0	1.2¢	\$279	18,700
						✓	16.2	1.1¢	\$227	19,295	✓	16.7	1.1¢	\$268	18,700
						✓	14.6	1.2¢	\$240	20,400	✓	9.7	1.3¢	\$300	18,700
						✓	10.3	1.2¢	\$178	15,130	✓	10.0	1.0¢	\$242	17,500
						✓	12.3	1.2¢	\$186	15,810	✓	9.4	1.0¢	\$221	18,700
						✓	16.5	1.1¢	\$203	17,255	✓	13.5	1.1¢	\$247	18,700
						✓	12.9	1.2¢	\$231	19,635	✓	12.9	1.2¢	\$301	18,700
						✓	15.5	1.2¢	\$207	17,595	✓	11.8	1.1¢	\$374	18,700
						✓	16.7	1.2¢	\$200	17,000	✓	7.6	1.1¢	\$233	18,700
						✓	10.6	1.2¢	\$159	13,515		6.4	0.9¢	\$196	18,700
						✓	9.0	1.2¢	\$208	17,680	✓	20.7	1.2¢	\$270	17,500
✓	3.3	1.2¢	\$221	15,786		✓	10.4	1.2¢	\$193	16,405	✓	11.1	1.0¢	\$340	18,700
✓	4.9	1.4¢	\$93	6,643			9.0	0.9¢	\$136	10,625		5.9	0.5¢	\$125	18,700
✓	6.4	1.2¢	\$275	19,643		✓	15.9	1.2¢	\$241	20,485	✓	10.4	1.3¢	\$348	18,700
✓	6.3	1.2¢	\$278	19,857		✓	22.9	1.2¢	\$237	20,145	✓	12.3	1.3¢	\$362	18,700
✓	3.4	1.4¢	\$104	7,429			8.9	0.9¢	\$134	11,390		5.1	0.6¢	\$139	17,500
						✓	8.0	1.1¢	\$139	11,815		6.7	0.7¢	\$147	17,500
✓	2.8	1.4¢	\$107	7,643			8.8	0.8¢	\$152	12,920		5.2	0.6¢	\$153	17,500
						✓	10.4	1.1¢	\$150	12,750		5.8	0.8¢	\$150	17,500
✓	6.2	1.2¢	\$204	14,571		✓	14.6	1.2¢	\$180	15,300	✓	9.9	1.0¢	\$218	18,700
✓	5.6	1.4¢	\$266	19,000		✓	26.6	1.2¢	\$264	22,440	✓	12.9	1.4¢	\$395	18,700
✓	4.6	1.3¢	\$182	13,000		✓	11.1	1.2¢	\$169	14,365		8.8	0.9¢	\$199	18,700
						✓	10.4	1.2¢	\$143	12,155		6.7	0.8¢	\$149	17,500

September 2014, and for the previous fiscal year. GRA counted 6 million trips with a one-way value of \$0 to \$25, and categorized them by route and carrier. Our tools represent reasonable estimates of award traffic using a methodology similar to the one DOT analysts use

internally to decipher award volume. We then focused on the five largest national airlines by total passengers. Airports were grouped by city. The totals of the 10 percent sample were then multiplied by 10 to estimate the true U.S. totals.

Which Program Is Best for You?

We suggest you judge the various programs based on the following:

How good is the airline? Don't let award-seat availability wag the dog. Look for an airline highly rated by Consumer Reports. Among the five biggest carriers, JetBlue and Southwest had the best overall score for such factors as cabin service, seating comfort, and overall satisfaction. That's according to over 16,000 subscribers who assessed more than 31,732 domestic round-trip flights taken from 2012 to 2013.

What's the value of your points? The miles or points you earn are a currency. But unlike euros or dollars, not all miles are created equal. Their value varies by airline and is usually based on the number of points charged for a particular flight, travel dates, and advance purchase.

What you don't know about the value of points can hurt you. For example, in fiscal 2014, about 12,200 American AAdvantage members each redeemed 12,500 to 30,000 miles to fly each way between Los Angeles and San Francisco, the No. 3 award route. But because the cheapest average airfare for that short-hop route was \$104 each way (at JetBlue; see chart), they obtained a value of only 0.3 to 0.8 cent per redeemed mile. You should get more for your miles than that, but the frequent flyer pay-with-miles pricing schemes can make it difficult to know whether you're getting a good deal.

In our chart, we solved that problem for you by figuring out the dollar value of the points you pay for each trip. With mileage reward credit cards, the most common method by which infrequent flyers earn miles, you usually earn one mile or point for each dollar you spend. The value equals 1 cent per mile. We used the lowest average airfare of an airline serving each route—that was Southwest's or JetBlue's, usually—as the bottom-dollar benchmark of worth. We then divided the benchmark price for each route by the average number of

miles needed for an award to get the cents per redeemed mile value. With 1 cent per mile the break-even point of value, we recommend that you try to come out ahead of that by using your miles on trips worth 1 cent per mile or greater. (We used an average to account for the fact that "saver" awards can be booked in advance for far fewer miles than "anytime" rewards, and because we don't know the proportion of saver vs. anytime awards on each route, we thought the average number of miles needed a more fairly expressed value.) Of course, the fewer miles needed for a saver award, the greater the per-mile value. But airlines also tightly limit the number of saver awards, so that better value is actually more difficult to get.

We found good news and bad: JetBlue awards provided a good value on all of the routes it serves, but it operates only on 10 of the 25 top routes. Southwest gave customers a good deal on 88 percent of its routes; United did so on 60 percent. Delta and American, on the other hand, provided good award value on 38 and 36 percent of their routes.

Breadth of service. The more destinations served by your airline, the more award options you have. American, Delta, and United take the title here, with their huge networks of U.S. and international service to 326 to 373 destinations worldwide plus international partner airlines. JetBlue and Southwest are puny by comparison, with service to fewer than 100 mostly U.S. cities and some Caribbean and Mexican destinations; international award options are significantly limited.

Extra fees. United ladled on the most, with charges for making reservations by phone, booking last minute, changing plans, cancelling a trip, and redepositing points after you cancel—a whopping \$475 if you had to pay for all of them. Southwest charged no fees, and the others racked up a couple of hundred dollars' worth.



Top 5 Destinations

Rank	Destination	Airline with highest award %	Total round-trip award tickets to that destination
1	New York	Southwest (12.8%)	643,860
2	Los Angeles	Delta (11.7%)	633,990
3	Las Vegas	Southwest (10%)	616,220
4	Miami	Southwest (13.7%)	515,060
5	Orlando	Southwest (9.3%)	472,430

How to Beat the System: Tips From a Super-Frequent Flyer

You'll probably never earn 300,000 to 400,000 frequent-flyer miles per year, as Jeff Harris does. An elite-level member of multiple award programs, Harris, from Los Angeles, travels the world buying and selling vintage high-end watches. But even infrequent flyers can benefit from his experience. We caught up with him in Sydney to get his best tips:

Explore connecting flights. Nonstops are always preferred, but when you can't get an award ticket that way, get creative with connections. If you're in the American AAdvantage program and are unable to book directly to London from

New York on British Airways, the logical One-world alliance partner, check Iberia, another Oneworld partner, for New York to Barcelona, then connect to London.

Consider partner airlines. You can often redeem your U.S. frequent-flyer miles for overseas travel on your airline's foreign carrier partners. For example, Cathay Pacific partners with American Airlines through the Oneworld alliance, which includes British Airways Executive Club, Japan Airlines Mileage Bank, and others.

Be flexible. If you can't get the flight you want, book what you can get, then check back in a few

days to see whether a better itinerary is available. If you can change your award ticket plans, there may be a fee.

Don't waste miles on nonflight rewards. "It's almost criminal to redeem miles for hotels or car rentals," Harris says. For example, United Mileage Plus would have charged 107,400 miles for three nights at the Omni Chicago hotel in June, a value we calculated to be worth only 0.8 cent per mile.

Look on the bright side. Sometimes you can't find an award seat, but there's a silver lining to that, Harris says. "When you're flying on miles," he points out, "you're not earning miles."

Sidestep the Gotchas

Most programs put hurdles in the way of your desired flight. Here's how to circumnavigate them.

Time your purchase. Shop for award tickets several months ahead of your departure, when more unsold seats are available. But don't forget that award ticket holders can change their plans, meaning that their seats might become available again. Also be aware that the demand predicted by the airline pricing software doesn't always materialize. So in some cases, you might have more luck cashing in your miles only a few days before you want to fly.

That's what IdeaWorks, a consulting firm in Shorewood, Wis., found last year when it made 7,640 award-booking queries using the websites of 25 U.S. and foreign carriers. Shopping three to seven months in advance, the testers scored 100 percent award-seat availability on Southwest, 92.9 percent on JetBlue, and 71.4 percent on United. American and Delta trailed, with 55 percent.

But when the IdeaWorks team went back and tried only five to 15 days before departure, United's rating jumped to 80 percent and the others declined. United apparently has policies that add more seats closer to departure, which ensures that they aren't empty when the aircraft door closes, IdeaWorks concluded. Late booking can come with extra fees and higher point costs, though.

Pick up the phone. Can't get a seat? Ditch the Internet, where 90 percent of award bookings are made. "The ticket agent is more skilled and has more flexibility than you when it comes to creating flight itineraries with the airline's reservation software," says Tim Winship, editor and publisher of FrequentFlier.com. "They can also override a restriction on an award seat and release it." Reservations by phone, however, usually come with a \$25 fee.

Pile up miles faster by switching programs. This year, Delta and United changed their rules to peg the earning of miles to dollars spent for tickets instead of miles flown round trip. Consequently, most general-level SkyMiles and MileagePlus members will earn less and elite members, who fly more frequently, will earn more. So the 2,186 round-trip distance from New York's JFK to Miami, for example, would have earned you that many miles before, but a \$300 Delta round-trip ticket price will now earn a SkyMiles member only 1,500 miles, a 31 percent devaluation. You can jump ship to American, which still let members earn miles based on the miles flown as we went to press, but AA gave us no assurances that it wouldn't change its earning scheme. Better yet, switch to Southwest Rapid Rewards, where you'll earn six points per dollar spent on the lowest Wanna Get Away fares and 10 points per dollar spent on higher Anytime fares.

Trade credit cards. Maybe you hate your airline's service or its award availability, but you're handcuffed to the program's credit card. Keep the old card (so you don't hurt your credit rating by closing the account), but give your points-earning business to a general frequent-flyer rewards credit card not wedded to a single airline. That plastic will help you pay for travel on any airline, so you can choose your true favorite. There are no blackout dates, so availability isn't an issue. Among such cards are Capital One Venture, BankAmericard Travel Rewards, and Discover it Miles.

Never buy points. You can buy the additional miles you need from some airlines, but don't. They cost about 3 cents per mile, clearly a losing proposition. Instead, use the miles you do have to buy a one-way ticket covering half of your round trip, which all big five airlines now allow.

The Odds of Getting a Trip to Hawaii



As the chart below shows, Delta booked the greatest percentage of Hawaii round-trip tickets for award travelers in fiscal 2014 from points all over the U.S. to Hilo, Honolulu, Kapaa, and Kahului-Wailuku-Lahaina, excluding island-to-island travel. We used round-trip tickets for the analysis to clearly identify visitors to Hawaii.

Although United booked a greater number of award tickets, that represented only 14 percent of its total passenger traffic to Hawaii.

Biggest twist: Hawaiian Airlines booked the lowest percentage of award tickets, and Alaska Airlines logged more than twice the number and percentage.

Airline	Number of round-trip award passengers to Hawaii	% of Hawaii trips booked for awards
Delta	79,020	18%
American	67,760	16%
United	136,330	14%
Alaska	66,080	9%
Hawaiian	33,570	4%

Award Rules Are *Not* on Your Side

Where consumer rights and protections are concerned, airlines hold all of the cards.

The Department of Transportation says it "does not have regulations" that directly govern frequent-flyer programs, except for the requirement that airlines disclose their own rules.

Those rules are universally one-sided: American says "mileage credit does not entitle members to any vested rights."

United says it has the right to change the terms and conditions, rules, or mileage levels at any time, with or without notice. Delta "has the sole right to interpret and apply" its program's rules.

Southwest Rapid Rewards members "do not acquire

property rights in accrued points and awards."

And JetBlue reserves the right to change or cancel its program rules at any time, "in its sole discretion, without notice or liability to you."

Dissatisfied? "You should complain directly to the company," the DOT advises.

There's one federal consumer protection you do have, however. Whether you buy a ticket with credit, cash, or miles, if the flight is canceled or significantly delayed, and the carrier doesn't offer prompt re-routing at no additional charge, you're entitled to a full refund of miles or points if you choose to cancel the trip.

Your Outdoor Oasis

The playbook for creating the backyard retreat of your dreams

ONCE UPON A TIME all you needed was a grill and a picnic table, but no one stops there anymore. “What homeowners are building outdoors rivals what they’re doing inside,” says Josh Kane of Kane Landscapes in Sterling, Va. “They’re making the outdoor space more functional, with lighting, a fire pit or fireplace, and comfortable furniture.”

You can start simply by lighting up the night with long-lasting LEDs and a portable fire pit to gather around. Underfoot, gravel walkways and patios are a European design style that’s becoming

more popular as a lower-cost alternative to stone and concrete. Overhead, a ceiling fan keeps the breeze moving. Outdoor fireplaces, and especially fire pits, have become popular hot spots as homeowners look to make the most of the space.

You don’t have to do everything at once. Take a multiyear approach, advises Kane, because poor planning or working with inferior materials to save money are the biggest mistakes people make. This guide offers tips, buying advice, and Ratings of exterior paints, stains, and gas grills. And to liven up things, we’ve recommended speakers for outdoor use and have advice on using other electronics in your fabulous outdoor space.





WHO NEEDS WALLS?

Set up a comfy living space on a deck, patio, or lawn and you'll never want to go back indoors.

1

Dress It Up

A patio umbrella adds color and flair. Its diameter should be at least 4 to 5 feet larger than the area you want shaded. So an umbrella with a 9-foot diameter is just the thing for a 48-inch-wide table with four chairs.

2

Spruce It Up

Check the weather forecasts before painting or staining. Too cold and paint may not stick properly; too hot and it can blister. Temperatures between 60° F and 85° F with little wind is ideal. See our paint Ratings, on page 39.

3

Warm It Up

Relaxing in front of a fireplace is the ultimate treat. Wood, natural gas, or propane provides the enticing glow. Keep it safe by creating a kids-free zone of at least 3 feet, having an extinguisher nearby, and dousing ashes with water.

4

Serve It Up

A stainless grill adds visual dazzle. To keep it looking great, apply a grease-cutting solution with a soft cloth, then an all-purpose cleaner, and finish with stainless polish. Grills are rated on page 41.

5

Liven It Up

Bring the music outside with small wireless speakers using Bluetooth or Wi-Fi technology. Or entertain your guests with movies under the stars by setting up a simple, DIY home theater. Details are on page 42.

Dress It Up

Outdoor furniture, rugs, and lights set the stage

COMFORTABLE SEATING is an invitation to relax. Make a big space cozier by creating several seating areas. Before you add or upgrade your furniture, measure the size of your space—no guessing—because patio furniture can be wide and bulky.

When shopping consider upkeep, as recommended by the manufacturer. Inspect the furniture's finish for consistency, and look for tight and well-fitted joints. Sit in the chairs. You'll want ones that are roomy and have comfortable armrests. Cushions should fit well and be well-padded and water-resistant.

Outdoor rugs define a space, add pattern, and smooth what's beneath them. They're also a quick fix for spots where nothing will grow. Lay a bedsheet on the area you want to cover to get a sense of the space, and note sheet dimensions so that you can use the info when shopping. If you're putting the rug under a table, measure the width and length of the table and add at least 4 feet to each dimension. Want to use a rug on your deck? Make sure the deck manufacturer says it's OK, otherwise moisture can get trapped underneath the rug and damage the deck—and possibly void the warranty. No matter the deck material, take up the rug every couple of months and clean under it. Remember, UV rays will lighten the deck area not covered by the rug.

Long-lasting LEDs designed for outdoor use are ideal for hard-to-reach spots, with

bright task lights for the grill area and warm light for ambience. Walmart's Great Value 90W PAR38 Soft White Nondimmable LED spotlight casts a bright, white light and can be used outdoors if it's shielded from rain and snow; it's a CR Best Buy at \$22 and works with some motion sensors. For warm yellow light, two CR Best Buy LEDs replace 60-watt incandescents and can be used outdoors if they don't get wet. They work in enclosed fixtures and with a motion sensor: Walmart's Great Value 60W Soft White A19 Dimmable LED, \$10, and the Cree 9.5-Watt (60W) A19 Warm White Dimmable LED, \$8.50.

For path lighting, low-voltage fixtures with LED lights are fairly easy to install. The wiring can be buried at 6 inches, not the 18 required with standard voltage.

Seating: How Much Should You Spend?

► New cushions, an umbrella, or a rug can breathe life into old patio sets and cost as little as a couple of hundred dollars. Refreshing metal furniture can be as easy as scraping off flaking finishes and repainting with a can or two of spray paint.



EASY DOES IT The great thing about plastic wicker: You can hose it down.



ZING
Plants can be used to divide the space, remind guests that there's a step, and yes, add color.

Spruce It Up

A freshly painted or stained house and deck: the perfect backdrop for outdoor activities

COZY OUTDOOR FURNITURE and snazzy lighting will only make peeling house paint or a stained, flaking deck look worse. Start now so that your home looks its best all season long.

After a tough winter, you'll want to assess how much prep work is needed before painting and staining. Also walk over the deck and check for softness and give, especially in areas that tend to stay damp, and press on railings, banisters, and steps. The deck and stairs should look level without sagging. Look for rot and insect damage beneath the deck platform, and check that the ledger board, which connects the deck to the house, remains tight. Retighten loose screws and lag bolts and pound nails back down. Any doubts? Get a professional inspection. The North American Deck and Railing Association lists certified deck builders on its website, at nadra.org.

Even if you want to tackle the deck rehab yourself, you need to take special care in two instances. A deck built before 2004 is probably made of chromated copper arsenate (CCA) lumber, which contains toxic arsenic. Consult a pro if you're not sure. Regular refinishing helps seal in the arsenic. If the finish is flaking, call a pro equipped to safely remove the old finish, dust, and debris, and to apply new stain. And if your home was built before 1978, anyone you hire to repaint the exterior or interior must be certified by the Environmental Protection Agency and trained in lead-safe practices.



Paint: How Much Should You Spend?

► **Buy a bucket.** Need 5 gallons of paint or stain? Buy it in one 5-gallon bucket for more consistent color and savings of up to \$30.

► **Use the right brush.** Stick with synthetic brushes for latex paint because natural bristles are hollow and can go limp as they absorb water, making for a harder and possibly sloppier paint job.

Flat and satin paints are what most people use on siding, and semigloss on trim. How much of your deck's natural grain you want to see—and how often you want to refinish the deck—determines the type of stain you choose. Solids hide the grain in exchange for longer life, and clear finishes show it all but usually need to be reapplied every year. A semitransparent stain shows some of the grain and can still look good after two years. Check our Ratings for which did best at resisting mildew growth, important in humid, shaded areas.

Use a scrub brush or a power washer to remove loose and chalky paint and dirt from your house and deck. A pressure washer costs \$200 to \$500, but renting one costs about \$50 to \$80. Read its instructions. Cover landscaping with plastic sheeting and wear long sleeves, long pants, and rubber gloves. The pressure needed for a deck is roughly 1,500 PSI. Use a wide-angle spray tip of 25 to 40 degrees for a wide spray that protects the wood. Angle the spray and keep it 6 to 12 inches away from wood surfaces. Scrape and sand where needed.

Ratings: Exterior Paints and Stains

Scores in context: Of the 13 exterior paint lines we tested, the highest scored 75; the lowest, 55; paint scores combine sheens. Of the 32 stains, the highest scored 74; the lowest, 5. Each year of the appearance score is equivalent to three years on your house. Claimed VOCs (volatile organic compounds) are in grams per liter.

☑ CR Best Buy ☐ Recommended

● Excellent ● Very Good ○ Good ● Fair ● Poor

A. EXTERIOR PAINTS

Recommended	Rank	PRODUCT	PRICE Per Gallon	SCORE	APPEARANCE			RESISTS				Claimed VOCs
					After 1 Year	After 2 Years	After 3 Years	Cracking	Color Change	Dirt	Mildew	
☑	1	Behr Premium Plus Ultra (Home Depot) ¹	\$39	75	●	●	●	●	●	●	●	50
☑	2	Clark+Kensington (Ace) ¹	\$35	75	●	●	●	●	●	●	●	50
	3	Behr Premium Plus (Home Depot)	\$30	72	●	●	●	●	●	●	●	100
	4	Sherwin-Williams Duration ¹	\$68	70	●	●	●	●	●	●	●	92
	5	Benjamin Moore Aura ¹	\$68	70	●	●	●	●	●	●	●	67
	6	Valspar DuraMax (Lowe's) ¹	\$39	69	●	●	●	●	●	●	●	100
	7	Glidden Spred	\$30	69	●	●	●	●	●	●	●	100
	8	California Paints Fres-Coat	\$48	68	●	●	●	●	●	●	●	100
	9	Glidden Premium (Home Depot)	\$24	68	●	●	●	●	●	●	●	100
	10	Ace Royal Exteriors	\$28	60	●	●	○	●	●	●	●	50
	11	Glidden High Endurance Plus (Walmart) ¹	\$29	57	●	●	○	●	●	●	●	50
	12	Valspar Ultra (Lowe's)	\$30	56	●	●	○	●	●	●	●	100
	13	Sherwin-Williams Resilience Flat	\$63	55	●	●	○	●	●	●	●	48

B. SOLID STAINS

☑	1	Benjamin Moore Arborcoat Solid Deck & Siding	\$46	74	●	●	●	●	●	●	●	100
☑	2	Behr Solid Color Waterproofing Wood Stain (Home Depot)	\$29	74	●	●	●	●	●	●	●	100
	3	Cabot Solid Acrylic Siding ²	\$36	68	●	●	○	●	●	●	●	100
	4	Thompson's WaterSeal Deck & House Solid Latex	\$26	67	●	●	○	●	●	●	●	100
	5	Sears Weatherbeater Deck, Fence & Siding Solid	\$32	60	●	●	○	●	●	●	●	90
	6	Wolman DuraStain Solid	\$33	60	●	●	○	●	●	●	●	100
	7	Sherwin-Williams Woodscapes Solid ²	\$48	57	●	○	○	●	●	●	●	136
	8	Behr Premium Solid Color Weatherproofing Wood Stain (Home Depot)	\$37	56	●	●	○	●	●	●	●	100

C. SEMITRANSSPARENT STAINS

☑	1	Behr Premium Semi-Transparent Weatherproofing Wood Stain (Home Depot)	\$37	65	●	●	●	●	●	●	●	100
	2	Cabot Semi-Transparent Deck & Siding	\$38	46	●	●	●	●	●	●	●	250
	3	Behr Semi-Transparent Waterproofing Wood Stain (Home Depot)	\$29	41	●	●	●	●	●	●	●	100

D. CLEAR SEALERS

	1	Olympic Maximum Sealant (Lowe's)	\$34	28	●	●	●	●	●	●	●	98
	2	Thompson's WaterSeal Advanced Waterproof	\$23	27	●	●	●	●	●	●	●	100

¹Self-priming paint. ²Recommended only for siding and fences.

BEYOND LABOR DAY

A fireplace—fueled by wood, natural gas, or propane—can be the year-round center of entertaining.



Warm It Up

A fire pit or fireplace keeps the party going after dusk and extends the patio season

PATIO HEATERS, FIRE PITS, AND FIREPLACES

all take the chill off. But patio heaters lack the warm glow of a flame emanating from a fire pit or fireplace. A fire encourages people to gather around and linger. Fire pits and fireplaces use wood, natural gas, or propane, and whether you buy one or have it custom built, consider these tips from Josh Kane of Kane Landscapes in Sterling, Va.:

- Think about how often you'll use the fire pit and the number of people usually gathered around it. A fire pit takes up valuable space when set in the center of the patio, so a portable pit or one located near the patio edge might be better. That way you

can place some chairs in the grass, allowing more open space on the patio.

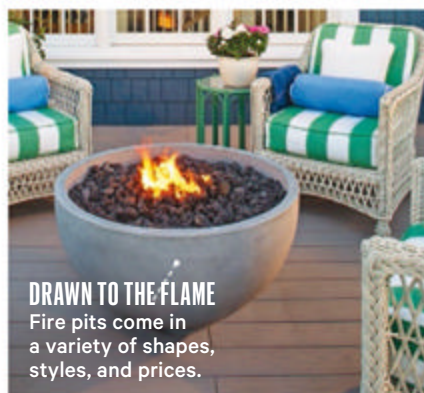
- Install the fire pit or fireplace away from any structure that smoke could stain. The same goes for anything that can burn—a distance of at least 10 feet. The National Fire Protection Association recommends that you not use a fire pit on a wood deck.

- Check that the diameter of a wood-burning fire pit is big enough to fit good-sized logs for a fire that lasts.

- Consult a pro if you're considering a fireplace. It's crucial that the firebox, throat, smoke shelf, and flue are properly constructed.

Fire Effects: How Much Should You Spend?

► For several hundred dollars you can create a cozy gathering spot with a portable fire pit. Custom-built masonry wood fire pits start around \$1,500 to \$2,000; gas fire pits cost more. Prefab fireplaces are about \$1,600 and more; custom-built models begin in the \$5,000 to \$10,000 range.



DRAWN TO THE FLAME

Fire pits come in a variety of shapes, styles, and prices.

Serve It Up

Gas grills are big sellers, for good reason

PUSH A BUTTON AND FIRE UP. Grilling is that easy with a gas grill, and there's no reason to stop as the weather cools. Most grills use propane, but some have a natural gas conversion kit for about \$75 or come in a natural gas version.

With natural gas you'll never run out of fuel and there's no need to refill propane tanks, but the grill must stay put. Plus you'll want to call a pro to run the gas line from your home to the grill.

Before picking your spot, find out which way the wind generally blows in your area during prime grilling months, at www.wcc.nrcs.usda.gov/climate/windrose.html. Keep the grill away from siding by at least several feet. The heat can warp vinyl and damage paint on wood siding.

"A lot of people make the mistake of putting it too close to the entertaining space. You don't want smoke blowing into your party," says Jason Craven of

SIZZLING IN STYLE

The top-rated Weber Spirit SP-320, \$600, has a side burner and other conveniences.



TOP: STACY BASS; BOTTOM LEFT: OWEN MCGOLDRICK

Southern Botanical in Dallas.

Here's what to consider when shopping for a gas grill:

- Estimate the number of people that you usually expect to feed, then check our Ratings chart, at right, for the size of the grill to match.
- In the store, take into account how much space the grill will eat up at home.
- Gently nudge it from several angles. The more stable, the better.
- Grip the handle—your knuckles or fingers shouldn't be too close to the lid.
- A greater distance between the grates and burners usually means fewer sustained flare-ups.

Grills: How Much Should You Spend?

► Most gas grills sell for less than \$300 and are used for three years, on average. Spending \$400 to \$600 can get you a midsized grill (\$600 to \$900 can get a large one) that delivers impressive or top performance, some midgrade stainless steel, sturdy construction, stainless or cast-iron grates, an electronic igniter, and a side burner.



Ratings: Grills

Scores in context: Of the 130 models we tested, the highest scored 81; the lowest, 22. Listed below are the top-scoring models in each category in order of performance. Recommended models offer top performance and specific strengths. CR Best Buys blend value and performance, and are recommended.

☑ CR Best Buy ☑ Recommended

● Excellent ● Very Good ○ Good ● Fair ● Poor

A. MIDSIZED GAS (ROOM FOR 18 TO 28 BURGERS)

Recommended	Rank	BRAND & MODEL	PRICE	SCORE	TEST RESULTS						
					Preheat Performance	High-Temp Evenness	Low-Temp Evenness	Indirect Cooking	Temperature Range	Convenience	
☑	1	Weber Spirit SP-320 46700401	\$600	81	●	●	●	●	○	●	
☑	2	Char-Broil Tru-Infrared 463435115 (Walmart)	\$260	80	●	●	●	●	●	○	
☑	3	Char-Broil Advantage 463240015 [Item #606688] (Lowe's)	\$300	78	●	●	●	●	●	○	
☑	4	Char-Broil Red 463250511 (Home Depot)	\$400	78	●	●	●	●	●	○	
☑	5	Kenmore Elite 33577	\$950	77	●	●	●	●	●	●	
☑	6	Brinkmann 810-6420-S (Home Depot)	\$170	77	●	●	●	○	●	○	
☑	7	Better Homes and Gardens BH15-101-099-04 (Walmart)	\$370	77	●	●	●	●	●	○	
☑	8	Vermont Castings Signature Series VCS300SSP	\$950	77	●	●	●	●	○	○	
☑	9	Brinkmann 810-6630-S (Home Depot)	\$300	76	●	●	●	●	●	○	
☑	10	Weber Spirit E-320 46710001	\$550	76	●	●	●	●	○	●	
☑	11	Landmann 42172 (Costco)	\$460	75	●	●	●	●	○	○	
☑	12	Char-Broil Stainless 463446015 [Item #606678] (Lowe's)	\$400	75	●	●	●	●	●	○	
☑	13	Weber Genesis S-330	\$970	75	●	●	●	○	●	●	
	14	Char-Broil Commercial Tru-Infrared 463242515 [Item #606680] (Lowe's)	\$400	74	○	●	●	●	●	●	
	15	Kenmore 16142	\$300	74	●	●	●	●	●	○	
	16	Vermont Castings Signature Series VCS423SSP	\$1,700	73	●	●	●	●	●	●	
	17	Weber Genesis E-330	\$800	73	●	●	●	○	●	●	

B. LARGE GAS (ROOM FOR 28 OR MORE BURGERS)

☑	1	Brinkmann 810-6550-S (Home Depot)	\$350	77	●	●	●	●	○	●	
☑	2	Napoleon Prestige Pro 665RSIB	\$2,600	76	●	●	●	●	●	○	
☑	3	Kenmore Elite 3358	\$1,800	76	●	●	●	●	●	●	
☑	4	Kenmore 16156	\$620	75	●	●	●	●	●	○	
	5	Char-Broil Advantage 463240115 [Item #606674] (Lowe's)	\$370	74	●	●	●	●	○	○	
	6	Napoleon Mirage M730RSBIPSS-2	\$1,650	74	●	●	●	●	●	○	

C. SMALL GAS (ROOM FOR 18 OR FEWER BURGERS)

☑	1	Weber Spirit E-220 46310001	\$450	77	●	●	●	●	○	●	
☑	2	Broilmate 165154	\$200	72	●	●	●	●	●	○	
☑	3	Napoleon Terrace SE325PK	\$600	71	●	●	●	●	○	○	
	4	Brinkmann 810-3800-SB (Home Depot)	\$200	70	●	●	●	●	○	●	

Liven It Up

Take your music outside with devices that deliver sound and video anywhere you want them



IN SUMMERTIME, ALL THE COMFORTS of home migrate to the yard. That includes digital devices. But backyards present special challenges with audio-visual gear. Wireless audio systems allow you to set up a speaker (or a few of them) and stream music almost anywhere, but you'll need one loud enough to stand up to the

outdoors. And a digital projector can create a movie night under the stars, but you'll have to add a screen and possibly speakers. Choose equipment that works for your needs and budget. Are you trying to add atmosphere to a family dinner on the patio or rev up a pool party? We'll help you find the right gear for either event.



Speakers for a Small Gathering

A compact, battery-powered Bluetooth speaker can be placed right on a table when you're dining with the family on the deck. And you can pick it up and take it with you as you move around the yard. The devices can play music from a tablet, laptop, or phone up to 30 feet away. The **Bose SoundLink Color, \$130** (above), strikes a nice balance of size and power. At a trim 5.5x5x3.5 inches, it won't hog the table, and it comes in five fun colors. In our tests, it delivered good sound quality, with a surprising amount of oomph for its size. If you're worried that a sudden cloudburst will damage the speaker, consider a weather-resistant model such as the **TDK Life on Record Trek Max (A34), \$150**, or the **Jabra Solemate Max, \$250**. Both can use near field communication to pair with another NFC-enabled Bluetooth device with just a touch. **Tip** You might find that the music drops out momentarily if someone walks between the Bluetooth speaker and the device with the music because that physically blocks the signal. Position your gear to minimize that possibility.



Music for the Gang

When it's your turn to host the party, you'll want to pump up the volume. The **Sony SRS-X7, \$200** (above), which works on Wi-Fi and Bluetooth, is louder than the Bose and TDK. You can also connect two or more SRS-X7s simultaneously via Wi-Fi to multiply the sound output as long as the music is stored on a computer. And the speaker is battery-powered, so you can put it almost anywhere. The **Sonos Play:1, \$200**, is another good option. You can use several of the Wi-Fi speakers (which require AC power) to play the same music, or mix it up with soft jazz near the diners and rock on the dance floor. **Tip** Wi-Fi range is affected by the distance and physical obstructions between the router, music source, and speakers. Under ideal conditions, you might get reception on a speaker that's 200 or more feet from the router; 100 to 150 feet is more typical. The range could be less if walls or other obstructions block the signals from the router. Do a dry run and adjust as needed. Heavy network demands can also cause drop-outs, so tell your Netflix watchers to stay offline during the party.



JUST ADD POPCORN
Screening movies outdoors is easy.

DIY Movie Night

An outdoor cinema can be an elaborate endeavor. You can take a maximalist approach, with a high-end digital projector and an outdoor screen with an inflatable frame, tent stakes, and tethers. Or you could do it more cheaply, like we did: We used a 1080p Epson PowerLite Home Cinema 2000 (\$550 at Amazon) and a twin-size bedsheet for a screen, tied up with tarp clamps and paracord. The Epson can play video from any Android device that supports the MHL format, or from an Apple iOS device through an HDMI adapter (we used an iPad mini). Our projector had a built-in speaker, but many don't. With



those models, you can use a wireless speaker with your phone or tablet. Our total cost was \$630, and it took us just 10 minutes from unboxing to watching a movie. (Full disclosure: We did that when it was 30° F outside, so we stayed inside the atrium at our headquarters in Yonkers, N.Y. But we'll try it outdoors soon.) Did it work out perfectly? Not exactly. Our Epson was bright, at 1800 lumens, but light shining on and through the sheet washed out the images. (Hang it against a wall or play the movie after dark.) And be sure to iron the sheet—we forgot to—because wrinkles kill the experience.

How to Get the Best Sound

READJUST Don't expect sound quality outdoors to be as rich as it is in a room. Bass loses its punch, and treble tends to get lost. Turn up both settings, but not so much that the sound is distorted. Put the speaker near a wall to enhance bass.

STRATEGIZE If you're using a few speakers, space them to provide good coverage. Set them on a table so that they don't get dirty, wet, or tripped over. If you use extension cords (be sure they're rated for outdoor use), secure them and keep them away from foot traffic.

SET THE MOOD Use the mood or genre stations on a service such as Pandora or Spotify to stream hours of music.

CONNECT Can't get a steady stream of music no matter what you try? Plug in. Many speakers have an input to connect a device using a cable with a 3.5mm plug on each end, and some have a USB port for a thumb drive loaded with music.

Ratings: Wireless Speakers

Scores in context: Of the 54 Bluetooth and Wi-Fi speakers we tested, the highest scored 70; the lowest, 20. Listed below are the top-scoring models in order of overall performance. All run on AC power; some also run on batteries. Wi-Fi speakers listed can be used in multiples with the same music source.

☑ CR Best Buy ☑ Recommended

● Excellent ● Very Good ● Good ● Fair ● Poor

	BRAND & MODEL	PRICE	SCORE	TEST RESULTS		FEATURES				
				Sound Quality	Ease of Use	Battery	Wireless Type		Wi-Fi Content-Sharing Technology ^①	Remote
Recommended							Bluetooth	Wi-Fi		
☑	Sony SRS-X9	\$500	70	●	○		•	•	A, D	•
☑	Sonos Play:5	\$400	69	●	○			•	S	
☑	Sonos Play:3	\$300	67	●	●			•	S	②
☑	Sonos Play:1	\$200	63	●	●			•	S	
☑	Libratone Zipp	\$300	63	●	○	•		•	A, D	
☑	Denon Heos 5	\$400	61	●	○			•	D, H	
☑	Edifier E30 Spinnaker Bluetooth Speaker System	\$240	61	●	○		•			•
☑	Sony SRS-X7	\$200	60	○	●	•	•	•	A, D	
☑	Jabra Solemate Max	\$250	60	○	●	•	•			
☑	Bose SoundLink Color	\$130	58	○	●	•	•			
☑	Harman Kardon Onyx	\$500	57	○	○	•	•	•	A, D	
☑	Stelle Audio Couture Audio Pillar	\$300	57	○	○	•	•			
☑	Definitive Technology Cube	\$250	56	○	○	•	•			
☑	TDK Life on Record Trek Max (A34)	\$150	55	○	●	•	•			

① A=Apple AirPlay; D=DLNA; H=Heos; S=Sonos. ② Optional.

3 Things You Need to Know About Wi-Fi Speakers

When you're shopping, you'll come across terms such as Apple AirPlay, DLNA, DTS Play-Fi, Heos, and Sonos. Those are wireless standards that a speaker uses to access content on a Wi-Fi network. Many speakers can use more than one. The main things you need to know are:

1. Apple AirPlay can access content from any computer that has iTunes installed and from Apple mobile devices. With an Android device, you'll have to use a third-party app. Also, to stream to multiple

AirPlay speakers from an iPhone or iPad, you again need a third-party app; you don't need it with a computer.

2. The other standards work with Apple and Android mobile devices and PCs, and some work with Mac computers.

3. If you want to send the same music to multiple speakers at once, you can mix and match brands as long as they use the same standard. In other words, you can't have one speaker that uses only AirPlay and another that's Play-Fi only.

Crunch Time!

While you're taking in the fresh air, try some fresh ideas in snacks: Chips with health benefits

YOU'RE ALL SET UP for outdoor entertaining, but perhaps you're feeling a little guilty serving chips and contributing to your guests' fat and sodium intake. Lay's Potato Chips, for example, have 170 calories, 10 grams of fat, and 160 milligrams of sodium in a serving (that's just 15 chips!). Legume and vegetable chips, on the other hand, can be

a little healthier—slightly lower in calories, fat, and, often, sodium. Plus many are higher in fiber and protein. And there are plenty that taste good, too. Our team of professional tasters recently tested 33 brands and found several that rated high for nutrition and flavor, so you can feel good about serving them at your summer party.

1

Bold and Spicy

Food Should Taste Good Falafel Chips, \$2, a blend of corn and chickpeas, are thin, crispy rounds seasoned with onion, garlic, cumin, and coriander—the spices often used in falafel, the Middle Eastern mashed chickpea dish. They have a bit of a kick. Our tasters called them “something unique.” And at 33 cents per serving (about 1 ounce for all chips), they were also the least expensive chip in our tests.

PER SERVING 130 calories, 7 grams fat, 75 milligrams sodium, 2 grams fiber, 3 grams protein.

2

Fiber With Flavor

You can almost feel virtuous munching on a handful of **Beanitos White Bean With Sea Salt Chips**, \$2.70. With 6 grams of fiber per 1-ounce serving, they supply about a quarter of your daily fiber needs. We also liked the black bean version, which were nutritionally similar to the white bean but had 1 gram less fiber per serving. Both got a Very Good rating for flavor.

PER SERVING 140 calories, 7 grams fat, 55 milligrams sodium, 6 grams fiber, 4 grams protein.

3

Edamame, Anyone?

The cracker-like **Crunch Master Popped Sea Salt Chips**, \$3.25, are a blend of edamame (soybean) and rice, and the flavors are nicely balanced. It's a sturdy chip for dipping but is also tasty on its own.

PER SERVING 130 calories, 3.5 grams fat, 250 milligrams sodium, 1 gram fiber, 3 grams protein.

4

Beginner Kale Chip

Most of the kale chips in our tests got a Very Good rating for nutrition, but they're a little too healthy to be party-friendly. **The Better Chip Spinach & Kale Corn Chips**, \$3.50, have hints of spinach and kale flavor but with more



of the mild taste and crunchy texture of a (light green) corn chip. They earned a Good rating for nutrition and a Very Good rating for flavor in our tests.

PER SERVING 140 calories, 7 grams fat, 70 milligrams sodium, 2 grams fiber, 2 grams protein.

5

Mixed Vegetable

If root veggies are your thing, consider vegetable chips. The two brands we looked at, **Terra Original Real Vegetable Chips Sea Salt Chips**, \$4.50, and **Trader Joe's Vegetable Root Chips**, \$3, are a combination of sweet potato, taro, yucca, parsnip, and batata with a little beet juice added for color. The Terra chips edged out the Trader Joe's brand in our Ratings by just a hair. The two brands have very different sodium contents listed on their nutrition facts labels: Trader Joe's claims just 35 milligrams and Terra claims 115. In our tests, our tasters noticed that they seemed to be similar salt-wise, so we measured the sodium content of both chips. The results: The Terra chips averaged a little less sodium than

claimed, but the Trader Joe's chips averaged 66 milligrams, almost twice the amount on the label. Both are still low-sodium foods to be sure, but even small variations in sodium can make a difference for people who keep close tabs on their sodium intake.

PER SERVING Terra: 150 calories, 9 grams fat, 115 milligrams sodium, 2 grams fiber, 1 gram protein; Trader Joe's: 160 calories, 10 grams fat, 66* milligrams sodium, 3 grams fiber, 2 grams protein.

6

Light and Crunchy

Made from green peas and rice, **Calbee Snapea Crisps Original Lightly Salted**, \$1.80, are more cheese puff than chip in texture. But they're light and crisp and came out on top overall in our Ratings. They're lower in calories, fat, and sodium (while supplying decent amounts of fiber and protein) than the majority of chips in our tests, although they averaged slightly more sodium than was claimed on the label: 66 milligrams instead of 50 milligrams.

PER SERVING 110 calories, 4.5 grams fat, 66* milligrams sodium, 4 grams fiber, 5 grams protein.

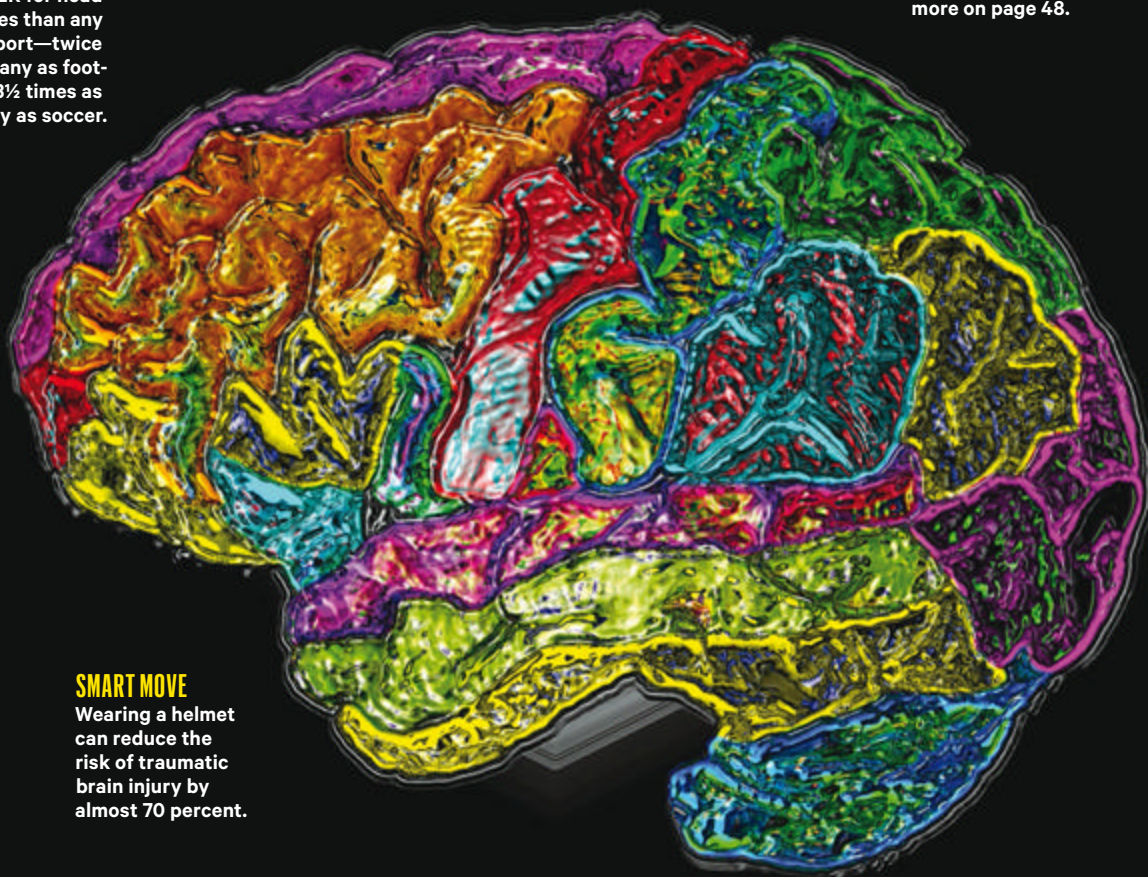
Lab TESTS

BIKER BEWARE

Cycling sends more people to the ER for head injuries than any other sport—twice as many as football, 3½ times as many as soccer.

SUDDEN IMPACT

Not sure if it's a concussion? Headaches and blurred vision after a spill are two key signs. See more on page 48.



SMART MOVE

Wearing a helmet can reduce the risk of traumatic brain injury by almost 70 percent.

BE GOOD TO YOUR BRAIN

Using a helmet when you bike will help protect against severe head trauma and may lessen the effects of a concussion. Our list of the best helmets—and how to use them—starts on page 46.

A Heads-up Call for Cyclists

Protect your brain with a bike helmet. We found great ones for as low as \$12.

DO YOU NEED A BIKE HELMET? You wouldn't think that would still be a controversial question, but it is. The anti-helmet contingent offers arguments such as: "Forcing people to wear helmets makes cycling seem dangerous." "It's inconvenient." "It discourages exercise." "More bike lanes would be better!" "No one wears them in Amsterdam."

Helmets aren't a panacea, but the answer is a resounding yes, you *should* wear a helmet. Here's why: 87 percent of the bicyclists killed in accidents over the past two decades were not wearing helmets, according to the Insurance Institute for Highway Safety. And when it comes to nonfatal injuries, a 2013 review by a committee at the Institute of Medicine found that wearing a helmet during sports reduces the risk of traumatic brain injury (TBI) by almost 70 percent.

TBI is a catchall term used to describe a spectrum of head injuries from concussions to skull fractures. Bike-helmet safety standards are designed to measure a helmet's protective-ness on the catastrophic end of the range—the realm of skull fracture, severe brain injury, and death. Of the 23 helmets we put through our impact tests, all absorbed the force of impact within the limit set by the current Consumer Product Safety Commission standard, and 22 received at least a very good rating for impact resistance in our tests.

Determining how well helmets protect against concussion—which can be serious, but not in and of itself life threatening—is trickier. The brain is a gelatinlike structure surrounded by fluid, which acts as a cushion against shock. A blow to the head or a violent movement (such as whiplash) can cause the brain to slide

or rotate inside and bump against the skull. That can disrupt the normal functioning of the brain and alter brain chemistry. You can't always "see" a concussion on a CT scan or an MRI, and there is still plenty that doctors and other experts don't know about concussions.

"There's no single objective test to determine if someone has a concussion," says Orly Avitzur, M.D., a neurologist and a medical adviser to Consumer Reports. "They're diagnosed based on symptoms and the results of a neurological exam." (See "Is It a Concussion?" on page 48.) If there's no objective test to show whether someone has a concussion, it's difficult to design a test to see whether wearing a helmet protects against one.

But the bottom line on helmets is: They work. First, there's the undisputed fact that helmets are very effective at reducing your odds of suffering a moderate or severe head injury if you fall. And though they may not protect against all concussions, because they are designed to slow the rate at which the head decelerates and to disperse and absorb the energy of an impact, chances are they help at least a little.

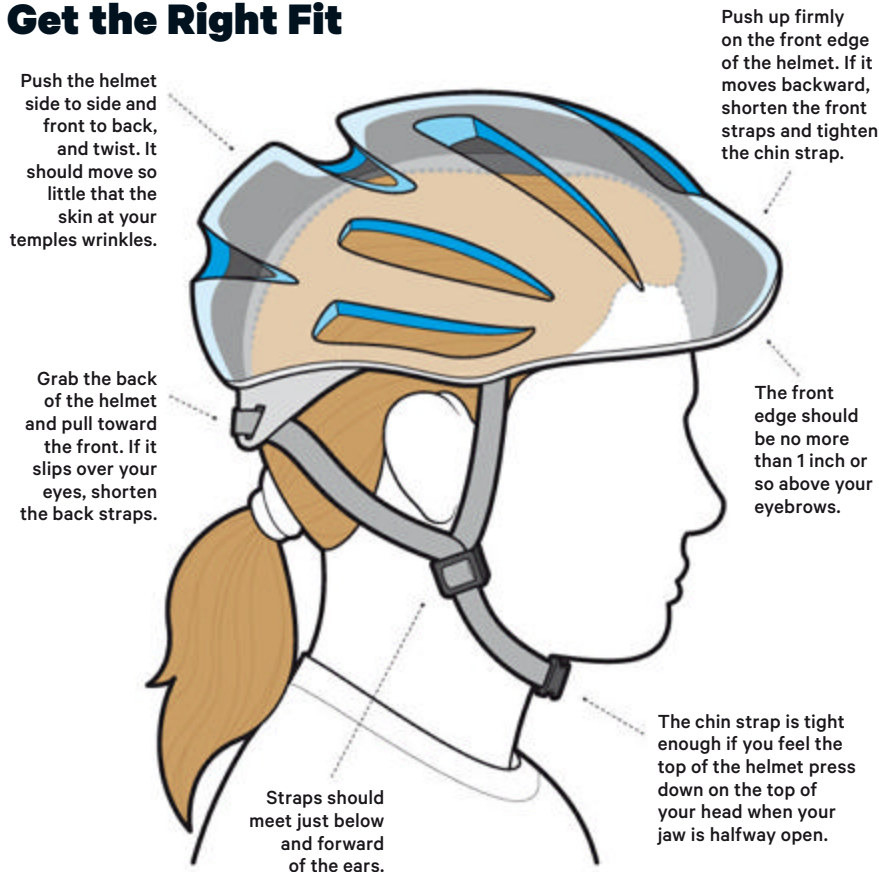
"The best studies done on bike helmets show that they are unequivocally effective in preventing traumatic brain injury—mild, moderate, and severe," says Frederick P. Rivara, M.D., M.P.H., vice chairman of the Institute of Medicine committee and a professor of pediatrics at the University of Washington in Seattle. "People should always wear a helmet when they ride a bike. And our studies show that when parents wear them, children do, too."

We Gave Them a Real Pounding

Safety is the most important factor when you're choosing a helmet. To test helmets, we put the them through a brutal pounding in our labs using an apparatus that dropped them at 7 mph and 14 mph onto a flat anvil to measure how they absorbed impact. We used an electronic sensor inside a dummy metal head to detect how much force would be transmitted to a rider's head in an accident. Because you can strike your head in different places in a fall, we hit each helmet at the front, crown, back, and sides.

We also checked each helmet's ability to pass a test that evaluates the strength and holding power of the chin strap. We dropped an 8¾-pound weight 2 feet; that pulled on the helmet strap to simulate the force that might occur in an accident. We checked to see

Get the Right Fit



Ratings: Bike Helmets

Scores in context: Of the 16 adult bike helmets we tested, the highest scored 85; the lowest, 38. Of the seven kids' helmets, the highest scored 80; the lowest, 30. CR Best Buys blend value and performance.

☑ CR Best Buy ☑ Recommended

● Excellent ● Very Good ● Good ● Fair ● Poor

A. ADULT HELMETS

Rec.	Rank	BRAND & MODEL	PRICE	SCORE	TEST RESULTS			SPECS	
					Impact Absorption	Ventilation	Fit Adjustments	Weight (lb.)	Sizes Available
☑	1	Scott Arx Plus	\$150	85	●	●	●	0.60	S, M, L
☑	2	Bontrager Circuit ^[1]	\$100	77	●	●	○	0.62	S, M, L
☑	3	Smith Forefront ^[2]	\$220	76	●	○	●	0.72	S, M, L
☑	4	Bell Array	\$80	76	●	●	●	0.70	S, M, L
☑	5	Lazer Cyclone ^[2]	\$45	73	●	○	●	0.78	S, M, L
☑	6	Specialized Echelon II	\$65	73	●	●	○	0.67	S, M, L
☑	7	Bell Piston ^[2]	\$40	72	●	●	●	0.68	Universal
☑	8	Schwinn Merge ^[2]	\$12	71	●	●	○	0.63	Universal
☑	9	Giro Revel ^[2]	\$45	71	●	○	●	0.67	Universal
	10	Poc Trabec ^[2]	\$150	67	●	●	○	0.75	XS-S, M-L, XL-XXL
	11	Bell Muni ^[2]	\$65	54	●	●	●	0.73	S-M, M-L
	12	Louis Garneau Sharp	\$95	42	●	●	○	0.61	S, M, L
	13	Nutcase Street Sport ^[2]	\$70	40	●	●	●	1.10	S, M, L
	14	Giro Reverb ^[2]	\$60	40	●	●	●	0.60	S, M, L
	15	Bern Macon EPS w/Visor Summer ^{[2][3]}	\$60	38	○	●	●	1.09	S-M, L-XL

B. YOUTH HELMETS

☑	1	Bontrager Solstice Youth ^{[1][2]}	\$40	80	●	○	●	0.57	Universal
	2	Schwinn Thrasher Youth ^[2]	\$25	67	●	●	●	0.73	Universal
	3	Specialized Flash ^[2]	\$40	49	●	●	●	0.70	Universal
	4	Giro Rodeo	\$30	39	●	●	●	0.59	Universal
	5	Louis Garneau Babyboomer	\$30	35	●	●	●	0.63	Universal
	6	Razor V17	\$20	35	●	●	●	0.98	Universal
	7	Raskullz Mohawk ^[3]	\$22	30	●	●	●	0.74	3+, 5+ (S)

DON'T BUY: SAFETY RISK

		Cannondale Teramo	\$120	-	-	-	-	0.61	S-M, L-XL
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^[1] Manufacturer says any helmet damaged in an accident in the first year will be replaced free. ^[2] Has a removable visor.

^[3] Multisport style resembles helmets used in BMX and skateboarding.



Scott Arx Plus

Find the Best Helmet for You

CUSTOMIZABLE FIT

- A1 Scott \$150
 - A3 Smith \$220
 - A4 Bell \$80
 - B1 Bontrager \$40 CR Best Buy
- These make it a snap to get the fit you want.

BEST IF YOU HATE A SWEATY HEAD

- A6 Specialized \$65

PRICEY BUT WORTH IT

- A1 Scott \$150
- This one has it all—excellent impact resistance, easy fit, light weight, and very good ventilation.

CHEAP AND SAFE

- A8 Schwinn \$12 CR Best Buy
- It works, it's comfortable, and at 12 bucks, you can't go wrong.

LIGHTWEIGHT

- A2 Bontrager \$100
 - B1 Bontrager \$40 CR Best Buy
- The Bontrager helmets weigh just a little more than ½ pound.

MULTISPORT

- A15 Bern \$60
- If you like to skateboard and ride a bike and don't want to buy two helmets, this is a good option, though it was one of the heaviest models in our tests.

Don't Buy This Helmet

We rated the Cannondale Teramo helmet, \$120, a Don't Buy: Safety Risk because it failed our chin-strap strength test. The buckle snapped off or broke into pieces in four of the five samples we tested. We are not aware of any injuries related to the helmet, but a broken chin strap means a helmet might not stay in place in the event of a fall.

We contacted Cannondale to share our test results in December, and the company disputed our findings, stating that it stands by its third-party independent test results. Can-

nondale also said its helmets are "tested in accordance with the required [CPSC] protocol and have passed all testing" and that it had not received any reports of injuries. When we asked Cannondale whether the company would consider giving Teramo owners a refund or credit for the helmet, it said, "No issues with buckles or breakages exist." We attempted to contact the company again before press time, but it did not respond to our requests for comment. If you have concerns, we suggest you contact the company at 800-245-3872.



X Don't Buy: Safety Risk
Cannondale Teramo helmet

LAB TESTS

whether the strap stretched too much, or broke or came loose where it is attached to the helmet, and whether the clasp or buckle remained intact. All of the helmets passed that test, except the Cannondale Teramo, which we've rated a Don't Buy: Safety Risk (see "Don't Buy This Helmet," on page 47). Because that helmet failed our chin-strap test, we did not put it through our impact test.

It's All About the Fit

No matter how well a helmet protects, you're not going to wear it if it's not comfortable or is difficult to adjust. So we also looked at ventilation, weight, and fit adjustment. Combining the scores with those of our safety tests, the Scott Arx Plus, \$150, came out at the top of our adult helmet ratings. The Arx is equipped with a Multi-directional Impact Protection System. MIPS helmets have an inner lining that is supposed to minimize rotational force, believed to be a prime factor in TBI, and reduce the amount of energy delivered to the head.

But whether a helmet with MIPS minimizes rotational force any better than a helmet without MIPS is a matter of debate. Some experts argue that your scalp or hair functions similarly to a helmet liner and allows for slide on impact. We did not test that feature because we could not find a standard test for rotational force. We judged the Scott Arx Plus on the same features as we did for every other helmet in our tests.

By testing for impact resistance at two speeds, though, we attempted to see whether there were any differences in the helmets' performance in lower-impact accidents. A 7 mph helmet drop simulates falling 2 feet off a bike, and a 14 mph fall is like falling 7 feet. "It's not only how fast you're going—it's also the height you fall from that can have an effect on the severity of the impact," says Rich Handel, assistant test project leader for bike helmets. As you might expect, a fall from a higher height subjects your head to more force. But we didn't see any differences in performance between the two heights that would change a helmet's rating.

The top-rated bike helmet for kids is the Bontrager Solstice Youth. It didn't rate as high for ventilation as some of the others, but it got a very good score in our impact test and an excellent score for fit adjustment. At \$40 it's a CR Best Buy.

And speaking of cost, the helmets we tested ranged from \$12 to \$220. "You might find some of the more expensive models to be more stylish, but when it comes to protection and comfort, you don't need to spend a lot of money," Handel says. The \$12 Schwinn Merge adult helmet got a very good rating overall. That's a small price to pay to protect your brain.

Stand out at Night

Reflective gear can save cyclists' lives—provided that drivers can spot them in the first place. Our testers looked at 11 reflective garments and accessories along with a dark shirt used as a control. The mission: to judge how well each could be seen in headlights after dark at 300 feet, the stopping distance for a car going 60 mph in normal road conditions.

The bright yellow **Uline safety vest**, \$15 (top left), though not so fashionable, popped the most. The **Sugoi Zap fluorescent bike jacket**, \$159 (middle left), was also easy to spot. Both the **Gore Windstopper Soft Shell jacket**, \$180 (middle right), and **Eastern Mountain Sports Velo bike jersey**, \$55 (top right), could be seen easily from the back, thanks to big reflective elements, but less so from the front. The **Betabrand reflective plaid commuter shirt**, \$59 (bottom left), was the least visible at 300 feet. Reflective and lit wrist and ankle bands had good visibility.

The **SlapLit**, \$10 (bottom right), goes into flashing mode with the push of a button. Wearing one of those accessories alone limits reflectivity to one small area of your body, so we suggest wearing one with a reflective jacket, vest, or shirt for an extra measure of safety.



Uline safety vest



Eastern Mountain Sports Velo bike jersey



Sugoi Zap fluorescent bike jacket



Gore Windstopper Soft Shell jacket



Betabrand reflective plaid commuter shirt



SlapLit

Treat Your Bike Helmet Right

For something that protects you so solidly, a bike helmet needs to be treated with a surprising amount of TLC. Even normal handling can leave minor dents in the liner (which absorbs the impact), so be careful where you store it. When your helmet is dirty or the pads, liners, and straps start to get a little funky, use mild soapy water to clean it—harsher cleaning products can damage the shell or liner. Heat is a helmet's enemy. Don't just toss it into the trunk of your car. Many manufacturers warn against exposing it to temps above 150° F; it's not hard for the interior or trunk of a car to exceed that on a hot summer day. If a helmet is gouged or cracked—or has been involved in an accident, even if you can't see the damage—replace it.

Is It a Concussion?

If you fall and hit your head but seem to be OK, you still should pay close attention to how you feel over the next few hours or days. The symptoms of concussion vary and range from mild to severe. If you experience any of the following after a jolt to the head, play it safe and call your doctor or go to the emergency room.

- Headache or "pressure" in head
- Nausea or vomiting
- Balance problems or dizziness
- Double or blurry vision
- Sensitivity to light or sound
- Feeling sluggish, hazy, foggy, or sleepy
- Confusion or trouble concentrating
- Memory problems



4 Reasons to Get a Camera Instead of Using a Smartphone

SMARTPHONE CAMERAS have gotten pretty good, but most still lack some features that can translate into better photos, such as larger image sensors, optical zoom lenses, and effective image stabilization. You can find those capabilities in point-and-shoot cameras, which have gotten good enough to give “serious” cameras a run for their money. Because they’re usually smaller and lighter than SLRs, they’re easier to tote around. Here’s what you’ll find in the latest cameras we’ve tested:

1. LONG ZOOM RANGES

To capture an image with lifelike detail—say, the gargoyles on the cathedral, a lion’s

magnificent mane, or your kid’s face as he waits to catch that fly ball—you need to take a close-up shot. But that’s not always possible (or wise). To take a close-up from far away, you need a camera with a long zoom. Many new point-and-shoot cameras have zoom ranges of 25x to 50x and even longer, which can get you close to the action.

When you zoom in, the slightest shivers of your hand are amplified, so look for an image stabilizer to ensure blur-free shots. The 20-megapixel Canon PowerShot SX710 HS (shown above), \$350, has a powerful 30x optical zoom and a very good image stabilizer. At less than an inch-and-a-half thick and weighing

just 9 ounces, it’s slimmer and much lighter than many other superzooms. If 30x doesn’t get you near enough to the action, consider Nikon’s recently announced Coolpix P900, a \$600 superzoom with an 83x lens. That’s the longest lens we’ve seen on a camera like this, long enough to capture the craters on a midsummer night’s moon. We’ll test it soon.

2. EASY-TO-USE WI-FI

Many new cameras have built-in Wi-Fi to allow easy sharing of photos, a capability once limited to phones. With the \$300 Nikon Coolpix L840, for example, you can instantly transfer your photos to a phone, then post them to your favorite social-media site. The advantage is that you’re sharing shots from a camera that’s far superior to the one on your phone. Another plus: By wirelessly linking the L840 with an Android or Apple iOS device using Nikon’s Snapbridge app, you can preview shots and control the camera from across the room using your mobile device. This 16-megapixel camera has a 38x zoom, so you could take a selfie from across a football field.

3. BURST MODE

Point-and-shoot cameras aren’t always the speediest shooters, a downside if you want to capture the exact moment a whale breaches or the split second your daughter stays upright on her first big-girl bike. That calls for quick-fire “burst” shooting of multiple shots per second, which is usually a strength of SLRs. But one advanced point-and-shoot we’ve tested has a speed-shooting mode that puts many SLRs to shame. It’s the Panasonic Lumix DMC-FZ1000, \$800, which can capture 12 frames per second at its full resolution of 20 megapixels. Most SLRs and mirrorless cameras average 5 to 7 fps.

4. RUGGED AND WATERPROOF DESIGN

“Oops!” is the last word many cameras ever hear. Then comes the tumble down the stairs or into the lake. If you’re lucky, you can still get your pictures off the memory card, but your camera—or worse, your smartphone—is often kaput. The good news is that there’s a class of cameras (not shown in the Ratings) built to handle those klutzy moments. In fact, some cameras are designed to take a plunge, great for scuba diving or riding the rapids at the water park. Our tests showed that our top-rated rugged model, the Olympus Stylus TG-3, \$350, can go 50 feet deep and survive a 7-foot fall. The new Nikon Coolpix AW130 (shown above), \$330, is billed as an even deeper diver; it can go 98 feet underwater, according to Nikon. The company claims it can survive a 7-foot drop without breaking. We’ll test it soon.

Ratings: Point-and-Shoot Cameras

Scores in context: Of the 126 cameras tested, the highest scored 78; the lowest, 39. Listed below are the top-scoring models in order of performance. CR Best Buys are recommended models that are notable values.

☑ CR Best Buy ☑ Recommended

● Excellent ● Very Good ● Good ● Fair ● Poor

A. ADVANCED

Rec.	Rank	BRAND & MODEL	PRICE	OVERALL SCORE	TEST RESULTS				FEATURES		
					Image Quality	Flash Photos	Video Quality	LCD Quality	Megapixels	Optical Zoom	Wireless
☑	1	Canon PowerShot G1 X Mark II	\$800	78	●	●	●	●	13	5x	•
☑	2	Panasonic Lumix DMC-FZ1000	\$800	77	●	●	●	●	20	16x	•
☑	3	Leica V-Lux (Type 114)	\$1,350	76	●	●	●	●	20	16x	•
☑	4	Canon PowerShot G7 X	\$700	75	●	●	●	●	20	4x	•
☑	5	Leica D-Lux (Typ 109)	\$1,195	73	●	●	●	●	13	3x	•
☑	6	Panasonic Lumix DMC-LX100	\$900	72	●	●	●	●	13	3x	•
☑	7	Sony Cyber-shot DSC-RX10	\$1,000	72	●	●	●	●	20	8x	•
☑	8	Sony Cyber-shot RX100 III	\$800	72	●	●	●	●	20	3x	•
☑	9	Fujifilm X100T	\$1,300	71	●	●	○	●	16	1x	•
☑	10	Sony Cyber-shot DSC-RX100M2	\$600	71	●	●	●	●	20	4x	•

B. COMPACT

☑	1	Canon PowerShot N100	\$350	67	●	●	●	●	12	5x	•
☑	2	Nikon Coolpix S9600	\$200	63	●	●	○	○	16	22x	•
☑	3	Nikon Coolpix S7000	\$280	62	●	○	○	○	16	20x	•
☑	4	Canon PowerShot N2	\$300	62	●	●	●	●	16	8x	•
☑	5	Canon PowerShot S120	\$400	62	●	○	○	●	12	5x	•
☑	6	Canon PowerShot SX600 HS	\$180	61	●	○	○	●	16	18x	•
☑	7	Canon Elph 340 HS	\$150	61	●	○	○	○	16	12x	•
☑	8	Canon PowerShot SX610 HS	\$250	60	●	○	○	●	20	18x	•
☑	9	Sony Cyber-shot DSC-WX350	\$250	60	●	○	○	○	18	20x	•
☑	10	Nikon Coolpix S810C	\$350	55	○	○	○	●	16	12x	•

C. SUPERZOOM

☑	1	Nikon Coolpix S9900	\$350	67	●	○	○	●	16	30x	•
☑	2	Nikon Coolpix P610	\$500	66	●	●	○	●	16	60x	•
☑	3	Canon PowerShot SX710 HS	\$350	65	●	●	●	●	20	30x	•
☑	4	Olympus Stylus SH-1	\$365	64	●	○	●	●	16	24x	•
☑	5	Sony Cyber-shot DSC-HX50V	\$350	63	●	●	●	●	20	30x	•
☑	6	Canon PowerShot SX700 HS	\$280	63	●	●	●	●	16	30x	•
☑	7	Sony Cyber-shot DSC-HX300	\$400	63	●	○	●	●	20	50x	•
☑	8	Nikon Coolpix L830	\$200	60	●	●	●	●	16	34x	•
☑	9	Canon PowerShot SX530 HS	\$430	58	●	●	○	○	16	50x	•
☑	10	Nikon Coolpix L840	\$300	58	●	○	○	●	16	38x	•



Panasonic Lumix DMC-FZ1000

Pick a Camera for Your Needs

All of the models in the Ratings are recommended and are worth considering. The following cameras stand out for the reasons noted.

ADVANCED SHOOTING

- **A2 Panasonic** \$800
- **A4 Canon** \$700
- **A8 Sony** \$800

All three models offer strong performance. A2, the largest and heaviest, has an electronic viewfinder that's great for composing in bright light. It's among the few cameras that can take ultra-high-def video at 30 frames per second. A4's burst mode fires 6.5 fps; A2 and A8 take 12 fps. A8 has a pop-up electronic viewfinder; the Canon has no viewfinder.

EASY-TO-CARRY COMPACTS

- **B6 Canon** \$180 **CR Best Buy**
- **B7 Canon** \$150 **CR Best Buy**

These two cameras, which weigh about the same as some smartphones, have features those phones won't offer. That includes 18x optical zoom on B6 and 12x on B7, plus excellent image stabilizers on both.

SUPERZOOMING

- **C1 Nikon** \$350
- **C2 Nikon** \$500

Get up-close shots from the back row of the auditorium or bleachers with these two cameras. C1 packs 30x zoom into a relatively thin body. C2 goes twice as long, with 60x, but is a bit bigger. Both have swiveling LCDs, great for composing hard-to-reach shots or selfies, and good image stabilization.

Road REPORT

THE HIGH-MILEAGE CLUB

Who wouldn't love a car that just keeps going forever and ever? If you follow our experts' advice, there's no reason your vehicle can't make it to the magical 200,000-mile mark. Start on page 52.

CARS THAT GO THE DISTANCE

Begin your quest for the automotive Fountain of Youth by picking a vehicle from our top 10 list of long-lasting cars. See page 53.

EASY STEPS

Regular oil changes are crucial to keeping your engine humming along.

RED FLAGS

Five trouble signs, including excessive repair costs, may mean it's time to put the old car out to pasture. Find out what to look for on page 54.

Get Your Car to 200,000 Miles

How to squeeze the most durability and reliability out of those old wheels



WHEN LAURA WHITE of Oxford, Mass., bought a Toyota Corolla in 1997, her son was just 3 years old. Fifteen years later, he drove that Corolla to college.

By the time the car landed on the junk heap—victim of a car-totalling accident—it had more than 300,000 miles on it. That sort of durability isn't far-fetched if you take proper care of your car, because today's vehicles are more reliable than ever. A few easy tricks can help you nudge the odometer well into six figures.

"We changed the oil every 3,000 miles and the timing belts regularly," Laura says. "I never dreamed I would give the kids the car to drive when I bought it years ago."

You might not end up sending your toddler to college in a car you buy today. But improvements in rust prevention, engine technology, safety features, and electronics mean that 200K cars are pretty common now. Especially if, like Laura, you start with a safe, reliable model and maintain it properly.

When new, the 1997 Corolla was a Consumer Reports Recommended model in part because of excellent reliability, good crash-test results, and impressive performance in our battery of more than 50 tests. Today, the Corolla is on our list of the top 10 models that are still on the road after 200,000 miles. That's according to our most recent Annual Auto Survey, which gathered data on 1.1 million vehicles owned by our subscribers.

The Basics: Life Extenders

To improve your odds, start by choosing not just a safe and reliable model but also one with all of the features you want. If you'll be driving it for the long haul, it might as well be a car that you enjoy as the miles and years roll by.

Read the owner's manual. It's amazing how many people keep it tucked away in the glove box. Simply familiarizing yourself with the maintenance schedule can add years of trouble-free driving. The manual spells out how often your car needs basic services like

oil changes and tire rotations, as well as bigger jobs like timing-belt replacements.

Change the oil. Missing even one oil change can contribute to premature engine wear. Forget about your timing belt and your engine can suffer severe damage.

When we asked our online readers how they got to 200,000 miles, an overwhelming number mentioned that regular oil changes and proper maintenance were important.

Use the right maintenance schedule. In your manual, you'll find schedules for regular and severe/extreme use, with the latter specifying more frequent checkups. Consider using the severe schedule if you do a lot of stop-and-go driving, live in an unusually hot or cold climate, frequently tow a trailer, or often drive on dirt roads.

Newer cars require less service, and many specify 7,000 or even 10,000 miles between oil changes. Spark plugs can often last 100,000 miles or more. Many cars make it easier for you to keep track by calculating when an oil change is due based on your mileage

and driving style, then letting you know it's time with a dashboard message.

The key is to keep up with what's specified. Just remember that some mechanics might add services you don't need, which can add hundreds of dollars to regular 30,000- or 60,000-mile service.

Keep it clean. Apart from mechanical maintenance, keep up with regular washing and waxing, especially if you drive in a snowy region on salted roads. And don't forget to hose off the underside and wheel wells. More than just keeping your car looking good, regular washing can help prevent rust and structural damage.

Knowing When to Say Goodbye

Almost any car can make it to 200,000 miles if you're willing to throw enough money at it. But there's also a time to let go.

Consumer Reports says that the useful life of most cars ends around 200K. At that point, key components start showing their age—often with safety consequences. Also, owning a car that long could mean that you're lacking the latest essential safety gear, such as electronic stability control, curtain airbags, and crash-prevention systems.

If you reach 200,000 miles, talk with your mechanic about how much life your car has left. And see our related articles in this issue.

Best Cars for the Long Haul

Of the 1.1 million vehicles represented in our Annual Reader Survey, these models reached 200,000 miles or more the most often.

MODEL

Toyota Prius

Toyota Camry (4-cyl.)

Honda Odyssey

Honda Pilot

Toyota Corolla

Honda Accord sedan (4-cyl.)

Honda CR-V

Toyota Sienna (V6)

Toyota Highlander (V6)

Honda Civic sedan
(not including Hybrid, Si, GX)



Toyota Prius



Toyota Camry



Honda Odyssey

5 Reasons to Call it Quits on Your Old Car

By hanging on to Old Faithful, you're keeping yourself from owning a safer, more efficient, and reliable automobile, not to mention having all of the nice stuff that comes with a newer model. Need more convincing? Here's why you should throw in the oil rag on your old ride:

COST OF MAINTENANCE. No matter how diligently you stay on top of a maintenance schedule, parts inevitably fail. Replacing them is expensive and—depending on the car—the parts can be hard to find. If your monthly repair bills exceed the cost of one month's new-car payment, that's a hint to trade up.

EXPIRED WARRANTY. If your car is approaching an advanced age, even components with longer warranties, such as the engine and transmission, are far off in the rear-view mirror. Defects previously covered under warranty get you no sympathy from a mechanic now.

EFFICIENCY. Direct injection, variable valve timing, cylinder deactivation, more advanced transmissions, and other new technology add up to new cars that go farther than ever on a gallon of fuel and expel fewer carbon emissions. Your old car may have been efficient when you bought it, but as engines age they stop achieving anywhere near the advertised MPG.

SAFETY. Older cars lack blind-spot monitoring, collision avoidance, and other new technology, not to mention basics like curtain airbags and electronic stability control. Newer vehicles also have advanced steel and structural architecture that absorb the impact of a crash better.

YOU DON'T HAVE TO ROUGH IT. In the past 10 years, features once reserved for luxury cars—such as navigation, Bluetooth connectivity, and heated and cooled seats—are now in everyday vehicles. There's no shame in allowing yourself to indulge in basic creature comforts.

11.4

Average age, in years, of all cars on U.S. roads today, according to IHS Automotive.

<1%

Percentage of Consumer Reports survey respondents whose cars have more than 200,000 miles.

\$550

Average amount spent by 200K club members on maintenance and repair in the past calendar year.

10 Old-Car Red Flags

What it will cost to get to the double century

GETTING TO—AND PASSING—200,000 miles on the odometer is an impressive feat, but it's by no means unachievable. Reliability in many new cars has improved, and even the maintenance schedule in owner's manuals has been changed to help you get more miles out of your car.

As you approach that milestone, many of your car's components will start to wear out. We recommend that you closely follow the service interval schedule.

Despite your best efforts, though, certain problems will crop up as you near the 200K mark.

We calculated the cost to repair certain items in a typical 2008 Toyota Camry V6 using the Consumer Reports Car Repair Estimator, which can be found free at ConsumerReports.org/carrepair. Your repair costs might be different.

1 Exhaust systems that rust out.

You can tell because your car will get increasingly loud and will probably fail emissions tests come inspection time. According to our estimator, **the job could cost** \$1,880 to \$3,230.

2 Spark plugs. If maintained well, they can last 100,000 miles. But by the 200K mark, you could be overdue for a third set of plugs. **Cost to replace:** \$100 to \$300.

3 Shocks and struts. Does your car look like it's sagging, or does it shudder like it's in an earthquake every time you drive over a pothole? Then you probably need new shocks and struts. **Cost to repair:** \$280 to \$400 for one strut (you should replace them in pairs). But if you need a full set of shocks and struts all around, expect to pay closer to \$900 to \$1,300.

4 Oil. Increased oil consumption is common in older cars, so don't panic. You should routinely check and top off the oil between changes, especially before long trips. **Cost to replace:** A few bucks as needed.

5 Hoses, etc. Oil lines, vacuum lines, and all kinds of seals and gaskets can start to wear. You should look over your engine routinely for signs of leaks. **Cost to repair:** \$200 to \$370 for a new exhaust manifold. But if your head gasket needs replacing, you could pay into four figures.

6 Moisture buildup in the cabin. Almost 10 years of hopping in the car with muddy boots will take its toll, and a lot of the moisture will remain to fog up the windows and give you that old-car smell. **Cost to repair:** A soggy interior is forever, but you should be able to hold off the fog with a splash of Windex or another window cleaner. As for that musty smell? Blast the carpet with Febreze.

7 Electrical components. Years of water splash and spray can wreak havoc on your wiring and circuitry. Don't be surprised if features like power windows, windshield wipers, and even the instrument panel go on the fritz. The gremlins can be frustratingly difficult to trace. **Cost to repair:** \$370 to more than \$1,300.

8 Brake lines that begin to wear. They should be checked often as you approach the 200K mark. Have a car that won't start? That's a problem. A car that won't stop? That's a *problem*. **Cost to repair:** \$900 to almost \$2,000.

9 Mechanical components. Many original parts seem like they'll last forever, but even the strongest ones can wear out. Don't go cheap on replacement parts. If you did replace worn parts with substandard knockoffs, they might be on their way to failure much sooner than the original equipment. Also, if you buy certain premium parts, they might come with a lifetime warranty.

10 Rust. If you see even a little bit of rust forming around the wheel wells, hood, trunk, or suspension mounting points, there could be a serious problem beneath the surface. That structural weakness will make your car less safe in a crash. **Cost to repair:** Not worth it. Time to get a new car.

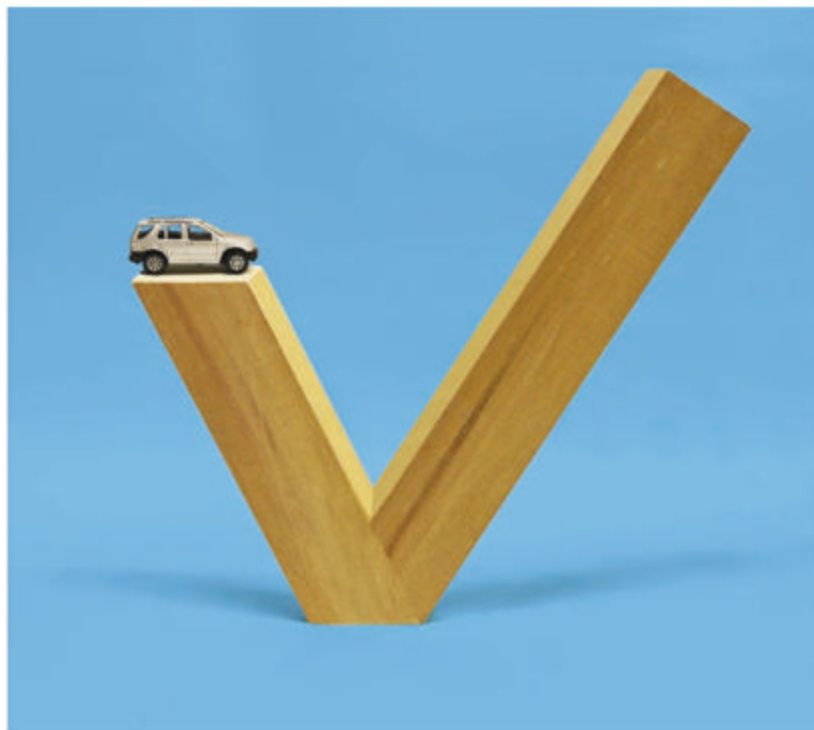


WATCH YOUR MILES

Milestone services to your engine shouldn't be ignored or you could have a more costly breakdown later.

Is Certified Preowned Worth It?

The price premium may not justify the extras it comes with, such as an extended warranty



DEALERS TOUT THEM, and seemingly savvy buyers look for the label, but does a vehicle that's "certified preowned" really offer an advantage? Is the 100-point inspection that earns a car "certified" status all that thorough? Or are buyers merely plunking down extra cash for an expensive limited warranty?

By definition, a "certified used car" is one that a manufacturer or dealer has vetted to a set of standards and deemed to be in better operating condition than its peers on the road. In reality, that's not always the case.

Certified used cars tend to cost thousands of dollars more than a typical used car—much of that upcharge is due to an included warranty or service contract. Consumer Reports has historically advised against paying extra for separate warranty coverage, often known as an extended warranty—one of the program's main selling points.

Actuarial data shows that you might be better served saving the cash you're putting into the premium price of a certified preowned (CPO) and using it for a rainy day repair on a traditional used car.

But if your CPO car has a major repair

covered within its warranty period, you'll be thankful you have that warranty. And the dealer's inspection of a car for certification might sniff out items that could become big problems later. The inspection also should ensure that any outstanding recalls have been addressed.

Although CPO cars usually come with an extended warranty, dealers will often push buyers toward an extended service contract that covers routine maintenance. Those costs can get expensive as mileage hits major service milestones at 60,000 miles and beyond.

Be wary. There are various degrees of certification. A used car may be advertised as certified, but it may not have the backing of an official automaker certification program. Some dealers certify cars themselves or sell third-party certifications—and though the car may be plenty reliable, you could be stuck in a

paperwork snarl when it comes time to make a warranty claim. You need to be aware of the differences, and you should ask the dealer to provide official documentation so that you know what kind of warranty you are buying. Also, not all certifications may be transferable from a previous owner to the next owner.

We recommend that you have any used vehicle—certified or not—inspected by a trusted independent mechanic, preferably one experienced in auto-body work. Expect to pay about \$100. Not all dealers will let you drive a car off the lot without a chaperone salesman, but a trustworthy dealer should understand your interest in getting an unbiased opinion.

Most important, just because a car is certified does not necessarily mean it is trouble-free. Consumers have taken legal action claiming that certified inspections were not properly performed, or that certified vehicles had serious defects, some of which affected vehicle safety. Don't assume that certification means the vehicle hasn't been wrecked, flooded, or suffered other serious damage—or even that it has been properly inspected.

Bottom line. We think it's fine to buy a noncertified car and bank any savings. Choose a reliable model and a vehicle that receives your mechanic's approval. If you choose a CPO, be sure to read the fine print on any warranty that is offered to determine whether the vehicle has been certified by a manufacturer, dealer, or third party.



2.3 million

Number of certified preowned vehicles sold in 2014.

\$23,200

The average amount paid in 2014 for a car labeled 'certified preowned.'

10 Great Used Cars Under 10 Grand

Reliable wheels that are safe for teens—and won't crush the college fund



CHOOSING A CAR for a teen driver requires making tough financial decisions just as college bills loom on the horizon. The temptation, and often the necessity, is to buy an inexpensive older model. But going too cheap has trade-offs that could jeopardize the safety of your child.

Automobile crashes are the leading cause of death for 14- to 18-year-olds. And the fatal crash rate for teen drivers is three times as high, per mile driven, as for the rest of the population. That means you shouldn't skimp on safety when choosing a used car for your young driver.

We've identified a few critical features for your teen's first car that will help keep him or her safe without depleting the college piggy bank. One must: Be sure your kid's car comes with electronic stability control—the most effective safety advance in cars since the seat belt—as well as side and curtain airbags.

Other important considerations: Cars should handle well in our emergency maneuver test and have good stopping distances (measured on factory tires). There's also the tricky middle ground of finding a car quick enough to get out of the way of trouble but not so fast as to get into it. All of the cars here meet those requirements.

Weight and size play a crucial role in safety. But we believe teens should drive sedans and not SUVs because SUVs' higher center of gravity tends to make them less stable and because they encourage bringing a gaggle of distracting friends along for the ride.

Phoning while driving—even hands-free—is something we strongly discourage among teens. However, emergencies arise. So this list calls out cars that feature Bluetooth connectivity to reduce distraction.

While you're waiting for your new driver to return with the keys to your own prized ride, check out our top 10 affordable suggestions for his or her first car.



➤ **Chevrolet Malibu**
(2009-2012, 4-cyl.)
Starting at \$8,125

It may scream "rental car," but the Malibu is solid, comfortable, and quiet. Its straightforward controls are a big help for teens. The pedals and steering wheel adjust for reach, which could make it an especially easy fit for teens who haven't yet hit their growth spurt. There's plenty of elbow room, and the seats are well-padded, especially if you find a Malibu with optional leather. Steering feel is light but accurate, and handling is responsive to help your teen swerve away from trouble. The four-cylinder engine is quiet and refined, and the car gets a respectable 25 mpg overall.



➤ **Ford Focus**
(2009-2011)
Starting at \$6,050

The fun-to-drive Focus has an upright seating position that provides a good view down the road. The optional Sync infotainment system makes phone connections hands-free. For a compact car, the cabin has easy access and a larger backseat for two than you would expect from the outside. An optional manual transmission allows a kid to learn to drive a stick—which also will keep his or her hands busy and away from texting. The biggest downsides are a noisy and cheap-feeling interior, although that won't matter much to teens happy to have their own wheels.

USED CARS



✦ **Ford Fusion**
(2010-2012, 4-cyl. and hybrid)
Starting at \$8,075

Bigger than the Focus, the midsize Fusion offers a more sophisticated interior and better handling and ride than its little brother. Sync Bluetooth connectivity and voice commands are available, but the distracting MyFord Touch system is an option to avoid. Center-console controls are simple, although some are oddly placed. The Fusion has a spacious interior and better-quality seats than other cars in the segment. The four-cylinder engine is backed by a smooth, quick-shifting six-speed automatic transmission, though the engine is noisy when accelerating.



✦ **Hyundai Sonata**
(2006-2014, 4-cyl., nonturbo)
Starting at \$5,225

Comfortable, quiet, and daresay almost luxurious, the midsize 2006-2010 Sonata has a pillowy ride—although the trade-off is numb handling. Freshened for 2009, the four-cylinder engine and five-speed automatic deliver quiet acceleration, with very good gas mileage at 26 mpg overall. The backseat will hold three across comfortably, but front-seat support sags on long trips. A redesign in 2011 brought swoopy, coupelike styling, but at a sacrifice of rear-seat head room for double dates. The newer models racked up an impressive 27 mpg overall.



✦ **Kia Soul** (2010-2011)
Starting at \$8,650

Kids bouncing off to college tote lots of boxes. And the Soul may be just the boxy appliance to deliver them. It gets impressive mileage and offers all of the features your child wants along with all of the safety features you demand. Kia's Uvo connection system will play songs from a smartphone and enable hands-free calling to reduce distraction. The tall, upright driving position gives a good view ahead—although thick rear pillars create big blind spots. The engine revs loudly, and the Soul's ride is jouncy. Still, the distinctive hatchback shape and versatility give the Soul a cool personality for your hipster-in-training.



✦ **Mazda3 i** (2011-2013)
Starting at \$9,825

We should get commission checks for how many people we've advised to buy this car. The Mazda3 is safe, fuel-efficient, reliable, and a blast to drive. It comes in either sedan or hatchback form. Mazda3 s models have a more powerful engine than Mazda3 i models, but we don't think teens need the extra boogie. Either way, the Mazda3 has spacious front seats and provides a nimble but reassuring ride, unusual for an econobox. You can get leather, navigation, and seat heaters, as well as rudimentary Bluetooth phone pairing. Its responsive handling and tidy size make it easy to dart away from trouble.



✦ **Mazda6 i**
(2009-2013, 4-cyl.)
Starting at \$8,375

One of the sportier midsize sedans on the market, the Mazda6 has a supple ride, with sharp steering and composed handling. The four-cylinder engine has no problem propelling this sedan, but cost cutting is evident in the pronounced road noise that seeps into the cabin. A long seat cushion and telescoping steering wheel make the Mazda6 a perfect fit for tall teens. Find a model with blind-spot monitoring—a boon to young drivers. Grand Touring models have larger, grippier tires, along with better seats and a nicer interior. Heck, you might borrow this car from your child.



✦ **Toyota RAV4**
(2004-2012, 4-cyl.)
Starting at \$7,300

If your teen needs the cargo space of an SUV for a cello or hockey pads, check out the RAV4. It's maneuverable, with precise handling, and has available all-wheel drive for inclement weather. The ride is choppy but still better than that of its competitors. The 2006 redesign has a longer wheelbase, providing more room for carrying dorm supplies with the backseats folded down. Bluetooth hands-free phone pairing became available with the 2006 redesign. We recommend staying away from third-row-seat versions; accident rates rise dramatically as more teens pile into a car.



✦ **Volkswagen Jetta**
(2009-2010, 4-cyl.)
Starting at \$7,250

A sophisticated small car, the Jetta handles enthusiastically and rides smoothly, with good stability under duress. The 2.5-liter, five-cylinder engine gruffly snorts power to the wheels, but fuel economy is below average. Large windows give it wide-open visibility. Controls are intuitive. Seats are firm and comfortable; the backseat and trunk are spacious. The interior is dressed in materials and features that feel pulled from a pricier car—such as an air-conditioned glove box and center console to keep sodas and snacks cool. Reliability is good. Its cuteness quotient is high.



✦ **Volkswagen Rabbit/Golf** (2009-2014)
Starting at \$7,700

Call it geek chic. The Rabbit and Golf have been among the best-selling cars worldwide for decades—but haven't really caught on in America. The hatchback's interior packaging is remarkably handy, whether transporting second-row passengers or loading up for a road trip. The Rabbit feels a bit built-to-price, but simultaneous with its rename to "Golf" in 2010, the interior fit and finish and features improved markedly—without detracting from the agile and secure handling, comfortable ride, and supportive front seats. It has the same thirsty engine as the Jetta.

Used-Car Must-Haves

Look for these key features in any preowned vehicle you buy

NEED A SLIGHTLY NEWER SET OF WHEELS? The smart money is on a late-model used car. It will offer some of the comfort and safety tech found in new cars, but at a more checkbook-friendly price.

Start with recommended models from our April Auto issue—ones that tested well when new, plus have proven reliability and good crash-test results. Find vehicles in your price range and the best condition. Then focus on some of these features:



Safety Gear

These basic features should top the list: side and head curtain airbags, antilock brakes, and electronic stability control. ESC, which became mandatory in 2012 but was widely available before then, is credited with being a lifesaver, especially in SUVs.

- **Rear cameras** can prevent back-over accidents, and they're a must-have in SUVs and pickups. In addition to helping you maneuver into or out of tight parking spaces, they make hitching up a trailer almost goof-proof.



Entertainment

We've never seen a huge benefit from high-end audio systems because road noise tends to drown out the subtle differences that make them stand out from more entry-level systems.

- **What we do like**, though, is being able to play music from our own digital devices. So look for a USB input or, at the minimum, an auxiliary jack, and at least two 12-volt power points. Newer vehicles with Bluetooth connectivity offer even greater versatility.

Kid-Friendliness

Parents should look for a vehicle with low windowsills so that your kids can see out with ease. It will keep them looking at the scenery rather than provoking each other. Check that there's room to easily install child safety seats, and look for convenient cup holders and storage nooks.

- **Shorten cleanup time** by choosing fake or real leather seats; they're easier to clean than fabric seats. And any family vehicle should have a generous cargo compartment.



Cheap Frills

One benefit that used-car shoppers can reap is the rapid depreciation of high-end features. The price gap between basic and top-trim models can shrink substantially after a few years. And with premium versions, you often get advanced safety gear in addition to the nicer furnishings.

- **Heated seats** are a near-necessity for people who live in the snow belt. They're common on newer high-trim versions of cars that are midsize or larger, as well as on all luxury nameplates. And you'll never forget your first heated steering wheel on a winter day.

- **Tire-pressure monitoring** has been mandatory since 2007. We much prefer systems that display an individual pressure reading for each tire rather than making you guess which tire is low or by how much.

- **Electronic crash-prevention systems** such as forward-collision warning, blind-spot monitoring, and lane-departure warning have been available on luxury cars for several years. But they have only recently started trickling down to the mainstream. Those features are worth seeking if the car fits your budget and meets your other requirements.

The Most Energy-Efficient Car Yet

Someday, geeks will rule the world. And the BMW i3 will lead their charge.



BMW i3

Electric. Nerdy. Cool.

79*

WITH ITS QUIRKY LOOKS, space-age construction, tree-hugging electric powertrain, and luxe-Ikea interior, the BMW i3 has shocked the automotive design world. This narrow, Picassoesque city car is the first widely available vehicle to have its underpinnings mostly constructed from carbon-fiber-reinforced plastic.

The i3's exotic lightweight construction helps make it the most energy-efficient car we've tested—the equivalent of 139 mpg when battery powered. That trumps the 84 MPGe of the Tesla Model S and zaps the Nissan Leaf's 106 MPGe.

Still, the i3 has the limitation of most electric cars, running only 75 miles before the charge runs out. Like training wheels for electric-car newbies, BMW offers an optional range-extending, two-cylinder gasoline-engine generator, which continues to provide electricity to the i3's 127-kilowatt motor.

That doesn't entirely relieve you from dreaded "range anxiety," as the minuscule 1.9-gallon gas tank provides a mere 50 additional miles of travel. It's designed to get you home, but not much more. Motor running, it returns only about 30 mpg—on premium fuel—so this is not a car for cross-

country trips. So far, most buyers are opting for the range-extending REx engine, for an additional \$4,000. The i3 works with some DC fast-chargers that can bring it to 80 percent battery level in 20 minutes.

In the i3, BMW brings its Teutonic dynamism to an electric car, with a spookily silent 0-60 time of 7.5 seconds. The aggressive regenerative braking drops anchor the instant you ease off the accelerator. And it wouldn't be a BMW without uncanny stability in corners—although its occasionally abrupt ride isn't befitting a \$50,000 car.

The i3 fits four inside its compact dimensions. But the rear-hinged back doors won't let out rear occupants until the driver or front passenger removes his own seat belt and opens a front door. Just the same, the i3's minimalist teak, leather, and tweed interior is sure to tickle the hearts of Dwell readers.

The future doesn't come cheap. Before a \$7,500 tax credit, the i3 starts at \$43,350, or \$47,200 with the REx engine.

Given its price, Playmobil exterior design, and short cruising range, it's easy to be skeptical about the i3. But its originality, impressive road manners, and pure efficiency give it a certain geeky charm.



TESTED VEHICLE

HIGHS	Energy efficiency, acceleration, agility, reduced range anxiety with optional gasoline engine
LOWS	Requires frequent top-ups, seats only four, awkward rear-seat access, scant cargo space
BATTERY	22 kWh lithium-ion
ENGINE	170-hp electric motor; plus 34-hp, 647-cc, 2-cyl. gas generator
CHARGE TIME	4 hours (240 volts)
FUEL	139-mpg equivalent (4.1 miles/kWh)
PRICE	\$43,350-\$50,250



Gripe: Front passengers must exit before rear occupants can open their own doors.



The i3 takes 4 hours to recharge on a 240-volt circuit and 17 hours with a household 120-volt.



CAR STRATEGIST

Can Your Car Get Hacked?

Your driving data is at risk. Someday, your car's controls could be as well.

YOUR CAR'S COMPUTERS know much more about you than you may realize. They're constantly tracking your driving behavior, speed, seat belt use, and more.

Because your car is networked, outside infiltration of your private data represents a serious threat to consumers. But misuse or inappropriate *lawful* use of that data is also a concern. In 2011, GM's OnStar division came under fire when it said it had the right to share location data with third parties. Likewise, data from apps used in your car's infotainment system could be sold to advertisers.

At a recent conference, Bryan Biniak, Microsoft's vice president of developer experiences, said those kinds of intuitive corporate interactions with drivers "based upon who I am and what I like" could be a *good* thing. What does that mean for you? In the future you could see targeted spam appear on your dash screen—perhaps a coupon for an oil change or a suggestion that you stop for a nearby cappuccino.

Today, some insurance companies offer reduced rates to drivers who install a driving-behavior tracker in their car—but could raise the rates if they speed. Already, some lenders install devices that can remotely halt a car purchased by a buyer who misses a payment.

But your data can also be hacked. Any time someone connects to your car's onboard diagnostics system (OBD-II) port, your vehicle's

secrets become accessible. And black hat computer hackers are claiming they can remotely invade your car's data systems without ever gaining access to the inside of your vehicle.

Last year, 19 automakers agreed to strengthen their vehicles' systems against hacking and sharply limit the external sharing of electronic data that drivers voluntarily share with them.

The takeaway: Driving privacy is under threat, if the auto industry and lawmakers don't take action, says Thilo Koslowski, automotive practice leader at technology research firm Gartner.

Runaway Wheels

What's more, some of those onboard infotainment computers have interactions with your car's driving controls. Consider the OnStar navigation and emergency-assist system: It tracks your car's location and history, but it also can disable your car if it's stolen.

Though being able to remotely stop a vehicle with a drunk driver behind the wheel or a kidnapped child inside can be a good thing, the wider implications are disturbing. Could someone with bad intentions remotely hack into your car's controls to lock your brakes in traffic or send you careening off a bridge?

A recent "60 Minutes" television segment raised that specter—and demonstrated how it could be done, complete with a video of

occupants sitting helplessly as someone with a laptop took remote control of their car's horn, windshield wipers, and even its brakes.

But How Realistic Is That Scenario?

The U.S. government's Defense Advanced Research Projects Agency (DARPA) and the National Highway Traffic Safety Administration have been working on identifying ways to protect consumers from car hacking for years. Amateur hackers are also proving that the "attack vectors" of cars need to be made more secure.

For its "60 Minutes" hack, DARPA needed to know the secure phone number that allows the vehicle to interact with the automaker's cellular network. But it did not need the vehicle identification number of the car or any other specific data.

Dan Kaufman, director of DARPA's Information Innovation Office, admits his team "knew the car quite well" in running its hack. Such an attack "would not work on just any random car," Kaufman wrote in an e-mail to Consumer Reports, "although a similar technique would work on many modern cars."

True, the scary scenario is not easy to achieve, but experts expect it to get easier. The worry among computer scientists is—beyond hacks demonstrated in laboratory settings—that a 14-year-old could eventually perform the hack on his laptop.

What Needs to Happen

At Consumer Reports, we have long been concerned about automotive privacy.

"As cars include more technological and computer advancements, concerns about the privacy of consumer data become even more pressing," says Ellen Bloom, senior director of federal policy for Consumers Union, the policy and advocacy arm of Consumer Reports.

Sen. Ed Markey, D-Mass., recently authored a report that studied the security systems of 16 automakers—and found them to be lacking. His office plans to introduce legislation to toughen vehicle security and privacy standards. Consumers Union will work with Markey, NHTSA, and the Federal Trade Commission to ensure that your data is better protected.

What You Can Do

If you want greater protection of your privacy, contact your congressman or senator and tell him that you support Markey's efforts. Keep track of developments on this at ConsumersUnion.org.

➔ MORE ON CONNECTED DEVICES
Your fridge, TV, and coffeemaker could all be watching you. See page 24.

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SELLING IT

Salad Day?

So should you plan to get your greens on a Wednesday? This flyer, submitted by George Barth of Cherry Hill, N.J., sends a mixed message.



Not valid on Wednesdays.

Far-Flung Shrimp

The map on this box, sent in by Martin Wolt of Estero, Fla., suggests that the seafood's provenance is coastal Georgia. But the fine print says it's from Thailand.



Sharp Warning

This cautionary illustration had Michael Brennan of Olathe, Kan., wondering: Did the owner of this hand not heed the instructions? "Or did he start out with only four fingers?"



Maybe This Qualifies as a Senior Discount

Adam Cortright of Lake Forest, Ill., marveled at this nail salon's special for a \$35 "Medicare + Pedicure."

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